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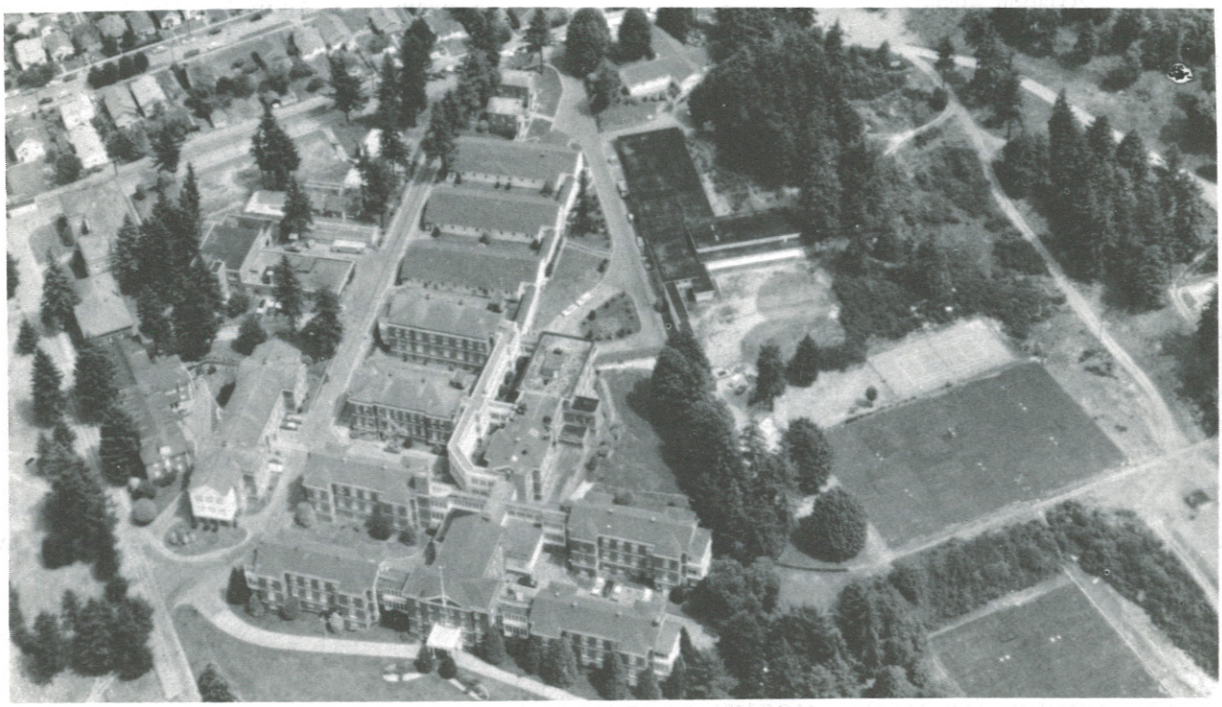

CONTENTS

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article, in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to Editor: Bureau of Medicine and Surgery, Navy Department, Washington, D.C. 20390 (Code 18), giving full name, rank, corps, and old and new addresses.

FRONT COVER: U.S. NAVAL HOSPITAL, BREMERTON, WASHINGTON. This Naval Hospital is the only one in the Thirteenth Naval District. It occupies 25 acres of land, situated on the north central edge and within the confines of the Puget Sound Naval Shipyard, overlooking the Shipyard and Sinclair Inlet. The Shipyard adjoins the City of Bremerton.

The sites for the Shipyard was purchased in 1891 and on September 16 of that year the "Puget Sound Naval Station" was established. The first Medical Department activity of the station was quartered in the USS NIPSIC, a small gun boat. On 4 November 1901, the Medical Department activities were transferred from the NIPSIC to a frame building ashore. On 25 January 1903, these sick quarters were designated by the Secretary of the Navy as a Naval Hospital. This marked the commissioning of the first naval hospital in the Northwest area.

Money was appropriated by Congress and plans for the new hospital were completed in 1907. The contract for construction of the hospital, at a cost of $143,971, was awarded 29 May 1909. The specifications provided for three buildings. These buildings, which today constitute the hospital proper, were completed on 27 January 1911; however, as no appropriation had been made for equipment for the hospital at that time, it was not until 1 January 1912 that the new hospital was occupied.

A plan for the further development of the hospital was proposed in 1928. It included construction of additional wings to the hospital group, a new Hospital Corps quarters, and a maintenance utility building which was to include space for a garage, machine shop, paint shop, electrical shop, and plumbing shop. The wing of the permanent group was started in 1931; the utility and garage building was constructed in 1936; the Hospital Corps Quarters was completed in 1937; and in 1939 the wing was added.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

SPECIAL ARTICLE

GENERAL CONSIDERATIONS OF WOUND MANAGEMENT

LCDR S. D. Harman MC USN.*

This is the last in a series of three medical articles being presented for publication in the U.S. Navy Medical News Letter by CAPT R. H. Brown MC USN, LCDR J. S. Cox MC USN, and LCDR S. D. Harman MC USN—on the subject of wounds and injuries. It is hoped that other medical articles may be received from other Navy Medical Department officers in the various specialties on subjects of timely interest.

The sorting of mass casualties or triage in the treatment plan provides for orderly management of large numbers of patients and operates on the principle of accomplishing the greatest good for the greatest number in the special circumstances of warfare and at that particular time. There is perhaps no more difficult task than the courage, informed judgment, and hard work required of the Medical Officer assigned to the task of casualty sorting.

Concepts of Sorting

1. The Medical Department supports the fighting forces.
2. The principles and practices in combat conditions place life-saving before limb saving.
3. Wounds are not static and must be managed properly with best facilities available.
4. The treatment of patients is directed generally as well as toward local wound treatment and consideration must be given to:
   a. Resuscitation.
   b. Immediate control of hemorrhage.
   c. Prudent evaluation of patient's condition as to when to evacuate him.
   d. Discretion in use of anesthesia.

Accompanying the riflemen are aid men from the Hospital Corps. These aid men give first aid of a basic nature, then the next level is the Battalion Aid Station where the casualty's stay is brief. The Collecting and Clearing Companies evacuate patients from the Battalion Aid Station. These companies give resuscitation, lifesaving and early definitive care to casualties who are in immediate need and cannot withstand further evacuation. The Force Hospital is located near the clearing companies and may expand to a 100-bed hospital. Highly specialized surgical care may be assumed by a separate surgical company, composed of 21 medical officers, among others. This may be subdivided into teams, according to the stage of an amphibious operation, or expanded into a 400-bed hospital. It is not necessarily, therefore, a normal echelon for evacuation. The casualties which are treated may be discharged to duty, or may enter into the normal chain of evacuation. With need, augmentation may produce three groups of medical officers and corpsmen. The First Group consists of 29 surgical teams to provide capability to an existing medical facility. The Second Group consists of 12 casualty evacuation teams for use on casualty evacuation ships. The Third Group consists of specialists designated by name who will be ordered to the Medical Battalion of a Marine Division to provide specialist capability.

Priority in Medical Care: Asphyxia, respiratory obstruction, sucking chest wounds, pneumothorax and maxillo-facial wounds. Shock due to blood loss, major muscles loss, fractures, multiple wounds.

Second Priority: Gastrointestinal, genito-urinary, and chest without asphyxia. Vascular injury requiring repair (tourniquet utilized). Closed cerebral injuries (loss of consciousness).

Third Priority: Spinal injuries, decompression required. Soft tissue wounds needing debridement. Minor fractures and dislocations. Eye injuries. Maxillo-facial without asphyxia.

Care at the Battalion Aid Station: Casualty should be rapidly examined and his condition evaluated, note also:

a. Color of skin and its vascular response.

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b. Temperature, respiration, pulse and blood pressure.
c. Level of consciousness.
d. Degree of discomfort and amount of morphine previously given.
e. Time lag since wounding.

First and foremost is the control of hemorrhage, and this is best done by pressure dressings of the battle dressing type. A tourniquet may be needed for arterial bleeding, but if used, several precautions must be noted. The pressure should be as low as possible to control the bleeding. The presence of the tourniquet should be well marked and advertised: preferably on the face of the patient. It should be left on until more definitive treatment can be given. The casualty surgeon has the responsibility of controlling the arterial bleeding by the best method indicated: such as a hemostat on an identifiable bleeder, pressure dressing, or immediate debridement and dressing.

Shock control and resuscitation is done by clearing the airway by suction and by the insertion of a plastic of metal oral airway. In patients with neck or face injuries, smoke or fire inhalation, severe chest wounds, or severe head wounds a tracheostomy may be immediately necessary. Multiple insertions of No. 14 gauge needles may provide the desperately-needed few minutes of time to allow moving the patient to a safe area where a definitive tracheostomy may be done. Whole blood, plasma, or plasma expanders are still the only treatment for shock, although vasopressors may be utilized for the immediate control of extreme shock. A healthy male may have lost 2,500 or 3,500 cc of blood before extreme or profound shock develops.

Dressings and splints should be applied no later than at the Medical Clearing Company level before moving the patient from the Battalion Aid Station. Though fractures themselves are not mortal, the complications of fractures can produce mortality and the severity of these complications may skyrocket if fractures, especially of large bones, are not splinted prior to patient transfer. Bulky dressings which aid in compressing the wound as well as insulating it from further contamination are desirable. Splints must be used on all fractures, joint injuries, hand injuries, multiple tendon injuries and peripheral nerve injuries. Careful evaluation must be made at this stage regarding any spine injuries.

Other Battalion Station Responsibilities: Narcotics must be used with caution. They should be given by the intravenous route if possible, due to the certainty of pick-up. Mark the patient's tag or forehead with the dose and time given. If possible, ask the patient regarding previous injection. In lieu of verbal statements, a check for identifying marks on the patient's tags, forehead, cheeks or chest must be done. Overdosage may be possible owing to the 30 mg syrettes of morphine tartrate available for field use.

A tetanus toxoid booster is given routinely to field wounds. During World War II this widespread practice kept tetanus infections to but 12 cases in the entire military effort between 1941-1945.

Antibiotic therapy in selected cases may be instituted at the Clearing Company level.

The patient must be made quickly transportable to the Force Hospital or the Separate Surgical Company to make room for additional patients. This should be accomplished within the hour, preferably, but certainly within a few hours, depending upon the injuries, the distance, and the type of transportation available.

At the Force Hospital the resuscitative measures and shock therapy is continued for stabilization of the patient, generally until there is a rising blood pressure with 80 mm of mercury as the baseline, a slowing of the pulse, an improvement in the color of the patient. Failure to respond to shock therapy may indicate one or more of the following complications:

a. Atelectasis
b. Tension pneumothorax
c. Concealed hemorrhage (chest, thigh, peritoneum, retroperitoneal)
d. Cardiac tamponnade
e. Severe infection
f. Fat embolism
g. Cerebral malaria

Once recognized, prompt treatment of the complication may be life-saving. Emergency surgery may be indicated before resuscitation is complete. For example, internal hemorrhage, spreading peritonitis, anaerobic infection, vascular lacerations. Sterility is vital for the prevention of wound infection. It is at this time that the stage may be set for either rapid healing with return to duty or delayed healing, with complications, and perhaps eventual amputation, disability, or death. Transfer to the next higher treatment center should be expedited, and ideally within three to eight days.

Aboard Casualty Evacuation Ships or Hospital Ships wounds are secondarily closed if inspected and found to be adequately clean. Reduction of fractures

and immobilization in permanent plaster is desirable. Certain long bone fractures may require more definitive treatment later, but most fractures can be reduced and casted. At this point some wounds may be healed so that the patient may be returned to duty with restored function. All other patients should be dispatched to a more remote general hospital. In Korea, the U.S. Naval Hospital at Yokosuka, Japan, permitted a more prolonged convalescence. Reconstructive surgery for the battle casualty was generally accomplished Stateside in permanent Naval Hospitals. This includes peripheral nerve repairs, definitive treatment of long bones, bone grafting, plastic surgery, tendon transfer repairs, and definitive amputations with prosthetic fitting.

General Principles of Wound Management

Wounds and injuries of the soft tissues: The objective of the surgical treatment of the wounds and injuries of the soft tissue is to minimize and localize the deleterious effects of the injury and to assist and support the natural powers of healing of the remaining healthy tissue. This is best done usually in two stages with common axioms: removal of the devitalized tissue and foreign substances, and the maintenance of an adequate blood supply to the area. The time lag between wounding and the initial wound surgery and the adequacy of initial surgery and the support and protection given to the injured tissue are three important factors which vitally affect the rapidity of wound healing.

The most important factor of treating a grossly contaminated wound is thorough debridement of the wound. This cannot be done without the proper anesthesia and should be done as soon as possible—when the patient is adequately resuscitated and in an installation with surgical facilities. The golden period of wound treatment is still 8 hours in spite of antibiotics.

The skin is the proper dressing for the wound and conservation of all skin possible must be done. Skin has an excellent blood supply and the usual debridement involves removal of only a thin border near the wound. En bloc removal of dirty subcutaneous fat and fascia is done.

Wounds must be enlarged for adequate exposure and debridement and in the longitudinal direction of the limb or along Langer's lines. Linear incisions of the enveloping fascia of an extremity is not sufficient to afford adequate drainage of blood and accumulated fluids. Occasionally wide excision of the fascia must be made to allow for post-operative swelling.

All devitalized muscle is excised. It does not bleed when cut. In enlarging the exposure of the wound splitting the muscle longitudinally avoids excessive bleeding and disruption of the fibers, preserving their natural stabilizing influence.

Irrigation of the wound throughout the debridement in copious amounts is a strict necessity.

Foreign bodies of any size should be removed at the time of initial debridement and after full exposure has been provided. Blind probing for a sharp metallic object and forceful removal from a deep wound is not recommended. Nerves and blood vessels may be injured. Prolonged probing in search for small foreign bodies is to be condemned.

Bone fragments which are dirty and obviously contaminated must be removed or thoroughly debrided. Those of doubtful viability will have to be excised unless the fragment is large and then it may be used as a free homogenous graft in selected cases. Ideally, no dead material is left in contaminated wounds and the separated bone fragment must be considered dead and inert.

Internal fixation of a fractured bone is not done at the time of debridement! The wound dressing should be dry. Fine mesh gauze or vasoline gauze may be lightly placed into the open wound. Gauze should not be jammed into the open wound as a tight plug. Primary closure of wounds is usually done.

Immobilization of the extremity post-operative is best done by the usual appropriate plaster cast or splint. If a circular cast is applied it is routinely univalved or bivalved to allow for swelling to prevent constriction of the blood supply or nerve damage due to pressure. Mark the cast with a rough diagram of the fractures of the bones as well as the date of debridement and cast application.

When drainage is utilized in a large wound or one with great destruction of tissue, loss of muscle and bone substance place the drain in the most dependent part.

In treatment of joint wounds debridement is still the single most important item. A pneumatic tourniquet allows a bloodless field. In the presence of associated vascular injury this may be dispensed with. A standard approach to the joint should be used if extension of the wound is not practical. All foreign materials, including articular cartilage is removed. In the case of the knee joint, if the patella is shattered it is best removed entirely with repair of the quadriceps tendon. All joints should have the capsule and synovium closed following debridement. Absorbable suture material is preferable. Post-operative aspiration may be necessary because

of the accumulated fluids, but when done it must be under only the most stringent asceptic technique. A joint is not drained unless infection is present. Any joint injury must be kept under close observation for several days.

Vascular injuries: Diagnoses of vascular insufficiency in an injured extremity may be difficult. A cold, pulseless limb may be the result of shock, exposure, spasm, crushing, contusion, or arterial injury. In arterial injuries the limb may be cold, mottled, cyanotic, pulseless and larger than the contralateral limb. There may be paralysis, spasm, or contracture of the muscles with anestheia.

The patient frequently has other injuries and may be in poor surgical condition. He is a high priority patient. Pulsating hematomas and A. V. fistulas are allied problems which have no urgency in casualty treatment. The patient with the tourniquet applied is such a high priority patient.

Control of hemorrhage from large arteries must be done by direct vision. It may be necessary to dissect from normal tissues toward the wound. Vital collateral circulation around the damaged vessel may be interrupted by a large pneumatic tourniquet and interruption of this collateral flow may hazard the viability of the limb.

Satisfactory debridement of the arterial wounds must be done. Rough, irregular wounds may appear superficially small, but may actually involve several millimeters of vessels. All damaged tissue must be excised and all clots removed, else secondary thrombosis or hemorrhage may ensue. Subadventitial hemorrhage may give the appearance of rather extensive damage to the vessel when such is actually not the case.

The subclavian and carotid arteries may not permit ligation. Ideally, arterial repairs and grafts should be left to the separate surgical company or to the advanced hospital where adequate help, blood, and equipment are available.

Following excision and debridement, scrutinize the artery and judge whether sufficient vessel remains to allow extension of the limb joints without undue tension. Additional length may frequently be obtained by some additional dissection. Judicious ligation of small branches may allow additional length. If tension is still too great a graft is indicated.

Direct anastomosis is best performed by dissection of the adventitia with either continuous end-on coaptation sutures or everting sutures of lubricated 6-0 braided silk on wedged round-curve needles. Repeated flushing of clots is imperative. If a graft is needed an autogenous saphenous vein graft may be utilized from the contralateral side. Remember to reverse the vein so that the direction of flow remains the same.

Ligation of large vessels is serious and amputation follows frequently:

81% in common femoral ligation
55% in superficial fermoral arteries
70–100% in popliteal ligation
26% in brachial arteries

Ligation is a procedure reserved for impossible-to-repair arterial damage or in casualties who could not tolerate the prolonged surgery required. Back bleeding is not always a safe guide as to when to ligate. Repair of normally ligated small arteries in the forearm or leg may be necessary.

Associated fracture and arterial injuries require special consideration regarding the ultimate treatment of the fracture. Traction for the fracture should not hazard the arterial repair. Split the cast for its full length for 10–15 days, after which continuity of the vessel will have been established. Joints should be in 10–15° of flexion to take tension off the vessels, and the extremity should be kept level with the body. The trunk and the three other extremities are kept warm, but the injured extremity is best exposed to ambient temperature.

Anti-coagulants are unnecessary. Sympathetic blocks may be necessary, but normal blood pressure and blood volume are essential to keep blood flow going. Fasciotomy may be needed if the ischemic muscles produce too much swelling in the closed fascil compartments.

In treatment of mass casualties some compromise of repair versus ligation will have to be accepted. Be ready to accept a 50% amputation rate. Remember that vascular injuries are of a high priority type in that control of hemorrhage is lifesaving.

Vascular injuries associated with nerve injury, and fractures are of the second highest priority group.

Peripheral Nerves: Extremity injuries resulting from battle wounds frequently involve nerve damage. Anatomic laceration of a nerve, either partial or complete, is undoubtedly the most easily recognized injury, but compression injury can cause transient physiologic block. Traction lesions or ischemic lesions can also simulate acute laceration when seen in conjunction with a lesion.

All nerve injuries are repaired in a hospital well away from the battle area. No special care at the time of wound treatment save for covering the cut ends of the nerve in soft tissue need be given. Tagging is not recommended, and primary repair is

NEVER indicated in battle wounds for three reasons:

1. Extent of local nerve injury cannot be determined accurately so that the extent of resection may not be known.

2. Dissection for mobilization of the nerve is necessary and would only extend the field of contamination.

3. There is a serious risk of infection associated with wounds and infections of the nerve might lead to an irreparable loss of function.

Transportation splinting is necessary to prevent damage to insensitive skin and relaxed affected muscles.

Wounds and Injuries of Bones and Joints

Consideration has already been made of the compound wounds involving bones and joints, but for emphasis—remember to splint all fractures and never reduce fractures at the Battalion Aid Station level. The initial surgery is ideally done at the advanced surgical hospital within 6-8 hours of wounding. Save all bone possible. Following surgery the extremity with bone and/or soft tissue injury is splinted or cast in anatomical position, but not necessarily with the fracture reduced.

Amputations may result from the force of a blast injury or may be done as an emergency procedure. All emergency amputations are done at the lowest possible level and the skin is left open, using skin traction to prevent skin retraction.

Thermo-nuclear Warfare creates problems of an extremely different type and will only be briefly alluded to.

Radiation burns, trauma with contaminated secondary missiles, and radiation require a whole new set of rules. Any patient with central nervous system injury with shock and loss of consciousness immediately or within 3-4 days of radiation indicates radiation dose of 1600R which is lethal. Vomiting of an immediate onset and persistence over 2-3 days also indicates a lethal dose. The gastrointestinal syndrome of mucosal denudation, hemorrhage, hyperactivity of the bowel is also indicative of a lethal dose. Lack of sphincter control indicates central nervous system effect and possibly a lethal dose.

Fallout 20-30 miles downwind from ground zero can be expected within 20-30 minutes at lethal levels in an explosion of 20-30 megatons. The fireball would also cause first, second, and third degree burns on exposed skin in this area, although shock would be not too significant and damage to frame homes would be relatively light.

The treatment of the acutely injured patient in a nuclear explosion depends upon the availability of time, material, and professional personnel, versus the known outcome in lethal radiation. The primary difference from ordinary wounding would be in the care of debridement and the debrided materials which could be contaminated. Because of later bone marrow depression in less acutely radiated patients, absolute and sterile technique is imperative. In these situations antibiotics which might be utilized immediately or early in a normally injured patient should be reserved for later use in the radiated injured person.

MEDICAL ARTICLES

TRANQUILLITY—AT A PRICE

Leo E. Hollister MD. Veterans Administration Hospital and Stanford University School of Medicine, Palo Alto, Calif. CPT 6(4): 417-419, July-August 1965.

Following a decade of wide clinical use, psychotherapeutic drugs are firmly established as potent and useful therapeutic agents. These drugs have sparked a revolution in the treatment of major emotional disorders, such as schizophrenia. This tremendously disabling illness, which strikes at an early age and may last a lifetime, is becoming more amenable to treatment. Hospital treatment of the insane, only recently a national disgrace, has now become more humane, more energetic, and most of all, more effective, due largely to drug therapy.[7, 9] While about 20 per cent of all hospital beds in the country are still occupied by schizophrenics, the progressive increase in numbers of hospitalized patients has halted, the duration of hospitalization has been shortened, and in many instances, hospitalization can be avoided. Surely the introduction of the antipsychotic drugs, begun with chlorpromazine (Thorazine) and reserpine and now expanded to a large number of phenothiazine derivatives, will be noted as a milestone in psychiatry.

The array of complications from phenothiazines is formidable and varied, including extrapyramidal syndromes, seizures, agranulocytosis, cholestatic jaundice, a variety of autonomic disturbances, endocrine disturbances, and pigmentary retinopathy. I have recently reviewed these in detail in this Journal.[5] Even now, new complications of great potential importance are being reported. Pigment deposits in the skin, cornea, lens, and viscera may limit the long-term usefulness of these agents.[4] Occasional reports of irreversible dyskinesias following these drugs raise the spectre of damage to the central nervous system, evident only after it is irreversible. Electrocardiographic abnormalities, histologic changes in the myocardium, and occasional episodes of sudden, unexpected death during drug therapy impel us to consider possible adverse effects of the drugs upon the heart. Despite all the dangers, real and potential, the extra-ordinary value of the phenothiazines for such a seriously disabling illness far outweighs the risk. It should be evident that such potent agents should not be used for trivial purposes such as the control of anxiety or vomiting, where other less hazardous agents may be effective.

Drug treatment of the ubiquitous symptoms of anxiety and depression presents a considerably different situation. Such patients are less severly disabled than those with schizophrenia, drug therapies are less obviously helpful, episodes of illness may be self-limiting, and other treatments such as psychotherapy or electroconvulsive therapy (ECT), may be more advisable. Thus, in treating these conditions, one must weigh carefully the potential benefits and harmful effects of drug treatment.

Perhaps the most serious harmful effect from treating anxiety and depression with drugs is in delaying more appropriate treatment. Symptomatic relief from drugs may prevent the patient from taking steps to alter his life situation so that anxiety or depression may be less likely to recur. The physician, too, may be tranquilized so that he fails to refer a severe psychoneurotic for psychotherapy or a severe depressive for ECT. Actually, both psychotherapy and ECT can be used effectively in combination with drug therapy. The gravest danger is to deny potentially suicidal patients the immediate ameliorating effects of ECT on depressions while temporizing with drugs. On the other hand, drug therapy following a course of ECT may lessen the chances for relapse during the next several months.[3]

Drugs used for treating anxiety and depression often are abused, even to the point of addiction. Lately the Congress has become concerned about illicit uses of barbiturates and amphetamines, sometimes by youngsters, to provide new kinds of "kicks." These drugs are well known to be habituating, as are many similar agents, such as mepro-

bamate (Miltown), chlordiazepoxide (Librium), diazepam (Valium), glutethimide (Doriden), ethchlorvynol (Placidyl), dextroproproxyphene (Darvon), and diethylpropion (Tenuate, Tepanil). Withdrawal reactions from sedative-type drugs resemble those from alcohol, though lengthened in the case of chlordiazepoxide and diazepam.[6] The stimulants do not often elicit withdrawal reactions but continued administration of substantial amounts can lead to the insidious onset of psychotic symptoms resembling those of schizophrenia; in this regard, amphetamines may be construed as the most nearly psychotomimetic drugs of all.[2]

Depressed or anxious patients often attempt to commit suicide. While total success in prevention is impossible, the physician may be properly embarrassed if he has made the act easier. Prescribed amounts of phenobarbital, meprobamate, imipramine (Tofranil), and amitriptyline (Elavil) can be lethal if taken as a single dose. A good idea is to prescribe limited quantities of such drugs at any single time and to renew prescriptions infrequently. Especial care must be taken in prescribing barbiturates for anxious patients who drink heavily; even small amounts of these drugs provide a lethal combination with substantial amounts of alcohol, leading to an unwitting suicide.

Our ignorance of possible impairment of psychomotor functions or judgment from drugs is appalling, considering the multitude of persons operating in society under their influence. The situation is complicated by the fact that laboratory experimental models may be quite inappropriate. Moreover, one can never be sure whether the same person might be more impaired from uncontrolled anxiety than from the drug used to treat it. Evidence suggests that some crucial functions are impaired. During a ninety-day observation period, 60 patients receiving 5 to 100 mg of chlordiazepoxide daily had ten times more traffic accidents than would have been predicted for a normal population. One patient involved in his first accident in twenty years showed definite visual changes, including poor depth perception and phorias.[8] Diazepam would probably produce similar impairment. As most sedative drugs are rather long-lasting, it is difficult to set standards for dosage which might avoid pronounced impairment at crucial times. Further, patients often take concurrently other drugs with depressant effects, such as alcohol, antihistamines, or other antianxiety or hypnotic agents. As individual susceptibility to sedative effects from drugs is quite variable, what may be a mild dose for one patient may be excessive for another. Plagued as we are by uncertainties, the only general rule would be to avoid any hazardous activity while taking sedative drugs; yet obviously its strict application is virtually impossible to achieve.

Even less is known about the interactions between drugs or between drugs and items in the diet. Several severe and fatal reactions have followed the combination of two types of antidepressants, the cyclic dibenzyls, such as imipramine and amitriptyline, and the monoamine oxidase (MAO) inhibitors, such as phenelzine (Nardil) or tranylcypromine (Parnate). The danger of such combinations is excessive central sympathetic stimulation, due both to increased sensitivity of central synapses to adrenergic amines and an increased content of such amines in the brain. Tranylcypromine, having both MAO inhibiting and amphetamine-like actions, may produce acute hypertensive states either when taken alone or with other drugs, such as amphetamine or epinephrine, or when cheeses high in tyramine content are eaten.[1] Fatal reactions due to potentiation of the respiratory depressant effects of meperidine have occurred in patients treated with this drug or other MAO inhibitors. The implications of inhibiting an important enzyme system for protracted periods of time are still unsettled. In view of some serious questions regarding the efficacy of MAO inhibitors as antidepressant drugs, and their possible serious complications, these drugs are not recommended for routine use.

Certainly one should not become so concerned with adverse reactions to drugs as to develop therapeutic paralysis. Such a danger seems unlikely, considering the tons of antianxiety and antidepressant drugs being prescribed. Rather, one would hope that clinicians would become more critical of the claims made for these agents and more conservative in using them.

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THE RED EYE

LCDR W. P. Mulligan MC USN.*

One of the most common diagnostic problems confronting medical officers is the patient presenting with a "red eye." That subsequent diagnosis and treatment are frequently somewhat less than exact and specific is common knowledge among ophthalmologists. The most commonly used treatment for these conditions is an ointment containing three antibiotics and a corticosteroid. The following is a brief guide to the "red eye" which may be helpful to those with limited training in ophthalmology.

History

1. Unilateral or Bilateral? Serious ocular diseases tend to involve only one eye, e.g., acute glaucoma, iritis, dendritic ulcers, etc. Therefore a unilateral red eye should be looked at with more suspicion than if both eyes are involved.

2. Previous History of Red Eye. Conditions such as iritis, dendritic keratitis, allergic conjunctivitis and blepharitis tend to be recurrent, while acute infectious diseases usually give a negative past history.

3. Type of Symptoms:
   a. Itching: almost diagnostic of allergic conjunctivitis.
   b. Foreign body sensation: Besides a foreign body, this symptom frequently is associated with misdirected eyelashes, corneal abrasions, blepharitis, and superficial keratitis.
   c. Photophobia: Strongly suggestive of keratitis or iritis, and is not generally associated with simple conjunctivitis.
   d. Lacrimation: Non-specific, but is most severe with corneal disease.
   e. Blurred vision: Strongly suggestive of a serious intra-ocular disorder.

4. Exposures:
   a. To other red eyes.
   b. To chemicals—common offenders are proprietary eye drops, hair sprays, insecticides, and cosmetics.
   c. Foreign Bodies: Especially when working around moving machinery or chipping paint; also contact lenses.
   d. Utlra-violet light: Arc welders, sun lamps, sun on snow.

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Examination of the Red Eye

1. Visual Acuity: The first and most important part of the examination; it should always be checked in each eye (with glasses, if worn) on any patient presenting with ocular complaints. If a formal eye chart is not available, a book or newspaper may be used. Minor problems, such as conjunctivitis, do not impair visual acuity to any significant degree, whereas it is usually diminished with keratitis, corneal ulcers, iritis, acute glaucoma and many other serious ocular diseases.

2. Exudate: Any ocular irritation results in a mucoid exudate, but purulent discharges usually occur only with acute infectious processes.

3. Size of Pupils: If a pupil is of different size, irregular in shape, or reacts poorly, it is strongly suggestive of a serious intra-ocular inflammation or an acute glaucoma.

4. Appearance of Cornea: The cornea should be stained with fluorescein and examined closely with a loupe, the +40 D lens of an ophthalmoscope, or a slit lamp, for the presence of abrasions, ulcers, or opacities.

5. Ophthalmoscopy: Can you see the fundus? If not, the patient deserves referral.

6. Intra-Ocular Pressure: Large differences in tension between the two eyes can be detected by palpation, but the only accurate method is to use a tonometer.

7. Adenopathy: Palpable and tender pre-auricular lymph nodes are usually associated with viral infections, occasionally with lid abscesses or cellutitis.

8. Type of Injection: Ciliary or peri-limbal vs. conjunctival injection is stressed in many books as a valuable sign, but is rarely of any practical value.

Management of the Red Eye

We will assume for the purposes of this discussion that the presumptive diagnosis is acute conjunctivitis of undetermined etiology. The recommended approach to this problem is as follows:

1. Culture and Sensitivity, if facilities are available. This helps improve the physician's diagnostic ability as well as providing the basis for effective and specific therapy for cases which do not respond, or go on to cellulitis or abscess formation. Cultures should be taken by rotating a wet swab in the lower fornix. The swab should be moistened in a trans-

fer medium such as thioglycollate broth before taking the culture, and then it should be promptly inoculated on blood agar. Cultures taken on dry swabs and then allowed to stand are virtually useless.

2. Smears: Smears of the conjuctival exudate stained with Gram's and Wright's stains are extremely valuable in acute purulent conjunctivitis, particularly in the newborn. Diagnosis of gonococcic, staphylococcal, and other bacterial conjunctivitis can be fairly well established within a few minutes by this method.

3. Specific Therapy: In our opinion the drug of choice for the initial treatment of most cases of acute conjunctivitis is sodium sulfacetamide ophthalmic drops in a 15% solution, or any other sulfa preparation available. The drops should be used QIH to QID depending on the severity of the infection. Sulfa drops are readily available almost everywhere, and are inexpensive, innocuous, and well tolerated. They have been found effective in 90 to 95% of cases of acute infectious conjunctivitis, and can be used on almost any "red eye" without causing harm. Ophthalmic preparations containing multiple antibacterial agents are usually unnecessary, may predispose the eye to a calamitous fungal infection and are more expensive. Medications containing corticosteroids should never be used unless the patient has been carefully examined with a slit lamp, a definitive diagnosis established, and close follow-up with slit lamp and tonometer instituted. The role of these preparations containing steroids in the aggravation and precipitation of herpes simplex ulcers of the cornea has been well publicized. Less well known is their role in the precipitation of fungus ulcers of the cornea and of chronic glaucoma. Their use in treating the ordinary red eye is not justified as they are usually of no therapeutic value and may well result in a catastrophe.

4. The Vehicle: Drops are generally preferable to ointments. Ointments smear the cornea and blur vision for 30 to 60 minutes after application, and most patients will not tolerate this while they are working. In addition, ointments retard the regeneration of corneal epithelium, and thus are contraindicated for corneal abrasions, photophthalmia, and after the removal of corneal foreign bodies. Ointments are especially valuable in the treatment of blepharitis, where they should be massaged into the lid margins after applying warm compresses at bedtime.

5. Follow-Up: Patients with red eyes should generally be seen 48–72 hours after treatment is instituted, at which time its effectiveness can be judged and culture reports are available. If the patient does not appear to be responding, careful re-examination should be done, after which specific chemotherapy may be started or referral to an ophthalmologist considered. Treatment should be continued for 3–4 days after signs and symptoms disappear.

Removal of a Foreign Body From the Cornea

1. Check and record visual acuity.

2. Apply 1 or 2 drops of a topical anesthetic agent.

3. Examine under loupe or slit lamp and attempt removal with a wet cotton applicator; if unsuccessful, attempt removal with an eye spud. The use of a hypodermic needle is slightly dangerous without a slit lamp.

4. Dilate the eye with Cyclogyl® (Cyclopentolate) 1 or 2%–1 drop every 3 minutes for 3 times. This relaxes the ciliary spasm which accompanies these injuries and is very effective in relieving most of the associated pain.

5. Apply a firm double eye patch for 24 hours, and instruct patient to retire and keep both eyes closed as much as possible.

6. Analgesics other than aspirin are usually not necessary if the eye has been properly dilated.

7. Recheck patient the next day. If there is still some staining of cornea, dilate again. No further therapy is usually necessary.

8. If removal of foreign body was unsuccessful, simply dilate the eye with Cyclogyl® patch, and refer to an ophthalmologist.

Management of Photophthalmia and Corneal Abrasions:

The term "photophthalmia" refers to an actinic injury to the eye caused by exposure to ultra-violet light emanating from arc welders, sun lamps, or from the sun reflected from snow. Such an injury results in many fine punctate erosions of the conjunctival and corneal epithelium in the exposed area. These are simply small abrasions, are not serious, and heal rapidly. Like any corneal abrasion, however, they are extremely painful, resulting in marked blepharospasm and inability to open the eyes, severe lacrimation and photophobia. Treatment of photophthalmia and corneal abrasions is the same as outlined above for foreign bodies. Healing is usually complete in 12 to 24 hours. Do not use more than 1 or 2 drops of a topical anesthetic on these patients,

as it markedly retards the healing process. The worst thing that can be done to such patients is to give them a tube of anesthetic ointment for self-application, as this always results in delayed healing and may cause permanent damage. Antibiotics are not necessary; analgesics may be.

Conclusion

Patients with red eyes can be best treated by the physician who performs a careful examination and institutes simple specific therapy, rather than the one who views the red eye from across the room and writes a prescription for Cortisporin® ointment. The physician's index of suspicion should be raised by the patient with reduced vision, with a unilateral red eye, or who does not respond after a few days of treatment. Neglect and mismanagement of these cases may result in permanent ocular impairment and disability. This can be avoided by careful examination, proper treatment, and prompt referral of problem cases.

Check List

Basic Materials for Ocular Examination

1. Visual acuity chart.
2. Magnifying loupe.
3. Ophthalmoscope.
4. Schiotz tonometer.
5. Fluorescein applicators.
6. Eye spud.
7. Cotton applicators.
8. Eye patches and adhesive tape.

Basic Drugs for Topical Use

1. Ophthaine® 0.5% (Proparacaine) or tetracaine 0.5%-topical anesthetic.
2. Cyclogyl® 1% (Cyclopentolate)-mydriatic-cycloplegic.
3. Sulfacetamide ophth. solution 15% and ointment 30%-antibacterials.
4. Neosporin® drops and ointment-antibiotics.
5. Zinc sulfate 0.25% ophth. Drops-all purpose for irritated eyes.

Basic Textbook References

1. Vaughan, Cook, and Asbury: General Ophthalmology.
2. Adler: Gifford's Textbook of Ophthalmology.

FROM THE NOTE BOOK

DRUG-INDUCED DIABETES

Some of the first reports on the use of chlorothiazide (Diuril) in hypertension drew attention to the risk of increased hyperglycemia in diabetics. Investigation revealed that the glucose metabolism of some patients with mild diabetes or "prediabetes" became more abnormal under treatment with thiazides. Further interest in the diabetogenic effects of these drugs was stimulated by study of diazoxide. This diuretic was never generally released, but a high proportion of patients treated with it in investigational studies developed overt diabetes. Diazoxide could cause diabetes in patients with previously normal glucose metabolism, and the question again arose whether thiazides could do the same. The true incidence of diabetes among patients receiving long-term thiazide therapy is important because of the very large number of patients at risk. From what is now known the incidence is about 30 percent. If mild thiazide-induced diabetes carries the same risk of vascular complications as spontaneous diabetes, and arises in 30 per cent of patients, the hazards may indeed be serious. Further investigation is needed to clarify both the incidence and etiology of thiazide-induced diabetes. In the mean time is there sufficient danger to require reassessment of these drugs in clinical practice? Some investigators have said that such drugs should not be prescribed for long-term use in patients with a relatively good life expectancy, and others maintain that thiazides should not be used in any patient with a diabetic or prediabetic tendency. At present there is insufficient information to justify complacency or to sound a general alarm. However, all physicians should be aware of the risks of diabetes, and patients receiving thiazides over a long period should have their urine tested regularly for sugar. If diabetes is suspected, the drug should be withdrawn after a glucose tolerance test. In most patients glucose metabolism improves after withdrawal of the thiazide. —Leading Articles Lancet 2: 328, Aug. 14, 1965. (For additional information see Clin-Alert No. 84, 150, 204, 207 & 246, 1962; Clin-Alert No. 112 & 136, 1963; Clin-Alert No. 105, 1964.)—Republished from CLIN-ALERT No. 259, September 30, 1965, by permission of Science Editors, Inc.

NAVAL MEDICAL RESEARCH REPORTS

U. S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Occurrence of Glycogen in Inclusions of the Psittacosis-Lymphogranuloma Venereum-Trachoma Agents: MR 005.09–1200.05, 7 October 1964.
2. Man Against Malaria: MR 005.09–1030–02, November 1964.
3. Gate Control of Ion Flux in Axons: MR 005.08–0020.02, May 1965.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt.

1. ABO Blood Groups and Hemoglobin Variants among Nubians, Egypt, U. A. R.: MR 005.12–5000.04, March 1965.

U. S. Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

1. Evaluation of An "E-Z Heet" Instant Hot Pack: MF 022.03.04–8006, July 1965.
2. Optimal Time of Exposure Required to Produce Acclimatization to a Hot-Wet Environment: MF 022.03.04–8002.3, August 1965.
3. Etiology of Primary Atypical Pneumonia in a Military Population: MF 022.03.07–8001.17, August 1965.

U. S. Naval Submarine Medical Center, Submarine Base, Groton, Conn.

1. Environmental Physiology of Submarines and Spacecraft: MR 005.14–3002–1.14, October 1964.
2. Relative Yellow-Blue Sensitivity As A Function of Retinal Position and Luminance Level: MR 005.14–1001–1.40, February 1965.
3. Noise Survey of Engine Rooms of USS TRINGA: MR 005.14–1200–2.03, May 1965.
4. Auditory Fatigue Underwater At 1900 Cycles Per Second: MR 005.14–1200–2.05, July 1965.

U. S. Naval Aid Development Center, Aviation Medical Acceleration Laboratory, Johnsville, Penna.

1. A Clinical Test of Norepinephrine Depletion: MR 005.13–0002.19 Report No. 1, June 1965.

U. S. Naval Aviation Medical Center, Naval School of Aviation Medicine, Pensacola, Fla.

1. Residual Effects of Storm Conditions At Sea

Upon the Postural Equilibrium Functioning of Vestibular Normal and Vestibular Defective Human Subjects: MR 005.13–6001 Subtask 1 Report No. 115, July 1965.

U. S. Navy Medical Neuropsychiatric Research Unit, San Diego, Calif.

1. Stability in Psychosis Admission Rates—Three Decades of Navy Experience.
2. Differential Effect of the Law of Initial Value (LIV) on Autonomic Variables: MR 005–12–2304.
3. Personal History Correlates of Military Performance at a Large Antarctic Station: MR 004.12–2004. Subtask 1 Report No. 64–22, August 1963.
4. Measurement of Group Effectiveness in Natural Isolated Groups: MR 005.12–2004, Subtask 1 November 1963.
5. Past Experience, Self-Evaluation, and Present Adjustment: MR 005.12–2004 Subtask 1 February 1964.
6. Performance Evaluations of Antarctic Volunteers: MR 005.12–2004 Subtask 1 Report No. 64–19, August 1964.
7. Structural Change in Small Isolated Groups: MR 004.12–2004 Subtask 1 Report No. 64–24, September 1964.
8. Psychological Aspects of Antarctic Living, October 1964.
9. Variability in Factor Structures of Clinicians' Personality Ratings: MR 005.12–2004 Subtask 1 Report No. 64–23, October 1964.
10. Neurological Findings After Prolonged Sleep Deprivation, November 1964.
11. Compatibility Among Work Associates in Isolated Group: MR 005.12–2004 Subtask 1 Report No. 64–13, November 1964.
12. The Relationship Between an Individual's Sociometric Status in Different Groups Over a Two-Year Period: MR 005.12–2201 Report No. 65–5, April 1965.

U. S. Naval Medical Research Unit No. 2, Taipei, Taiwan

1. A New Race of the Alpine Accentor, Prunella collaris, from Formosa: MR 005.09–1601.3.26, June 1964.
2. Hemoglobins J and E in a Thai Kindred: MR 005.09–1601.7.8, July 1964.

ANTIARTHRITIC DRUGS

Warning

The British Committee on Safety of Drugs has warned all physicians and dentists of serious side effects of phenylbutazone (Butazolidin), oxyphenbutazone (Tandearil), and nifenazone (Thylin). Since early in 1964, 50 cases of serious complications with 18 deaths have been reported in patients treated with Butazolidin. There were 16 comparable reports with 5 deaths in patients treated with Tandearil and 4 reports of serious complications, none fatal, in which Thylin was involved. There were 5 cases of liver damage and 9 cases of peptic ulceration thought to be due to Butazolidin or Tandearil. There were 52 patients who developed blood dyscrasias while being treated with these drugs. Their use demands care but the Committee still regards them as useful in serious conditions. The Committee also advised caution in the use of the new drug indomethacin (Indocid; Indocin).—News & Notes, Lancet 2: 396, August 21, 1965. — Republished from CLIN-ALERT No. 260, September 30, 1965, by permission of Science Editors, Inc.

NMRI PARTICIPATING IN SEALAB II

CAPT E. L. Beckman MC USN, Physiological Sciences Department, and Dr. R. W. Radloff, Behavioral Sciences Department, Naval Medical Research Institute, are in La Jolla, Calif., where they are participants in the "Sealab" program. Dr. Beckman is concerned with the evaluation of underwater swim suits for the thermal protection of the aquanauts and Dr. Radloff is studying their in-capsule behavior.

LIBRIUM

Jaundice

Librium (chlordiazepoxide) was introduced in 1960. It was not long before it became evident that the drug could cause liver dysfunction. The present report concerns a 51-year-old man who developed clinical jaundice after receiving Librium in a dosage of 25 mg daily for approximately six weeks. Liver biopsy showed infiltration of the portal areas by neutrophils, lymphocytes and eosinophils. Some bile canaliculi were dilated, with evidence of bile stasis. Scattered degenerating parenchymal cells were noted. Drug-induced jaundice is an important clinical entity that must be considered in every icteric patient. It should be noted that the number of drugs causing liver dysfunction has almost doubled since 1959.—Abbruzzese & Swanson (Boston, Mass.), New England J M 273: 321, August 5, 1965. Republished from CLIN-ALERT No. 230, August 24, 1965, by permission of Science Editors, Inc.

MUSTARD

Coronary Disease

In 1948 the author reported 50 cases of hypertension in patients who consumed excessive amounts of the hot condiments (pepper, mustard, and ginger). Of these, mustard, which contains not less than .006 per cent of the poisonous oil, allyl isothiocyanate, would appear to be the most irritating. Currently, the author presents 12 cases of coronary thrombosis and myocardial infarction associated with the eating of mustard. It is suggested that allyl isothiocyanate ". . . is the underlying cause of the production of the majority of cases of atheromatous sclerosis, that it has thrombotic properties and may even play a part in triggering some cases of the actual coronary thrombosis, and that the restriction of the hot condiments offers a means of prevention of the majority of cases of so-called essential hypertension, and coronary disease, and merits the consideration of the clinician, epidemiologist, and laboratory research investigator." Blair (Cleveland, Ohio), Ohio State M J 61: 732, August 1965. Republished from CLIN-ALERT No. 233, August 24, 1965, by permission of Science Editors, Inc.

LIQUID NITROGEN

Neuropathy

"I have become painfully aware of an uncommon but serious problem in the use of liquid nitrogen. This highly undesirable complication is neuropathy . . . (which) occurs as a result of freezing superficial nerves underlying the sites of liquid nitrogen application." The author presents two illustrative cases. In one, liquid nitrogen was employed with minimum pressure for 2 minutes in removal of warts from the patient's right second finger. Two weeks later the patient complained of numbness of the entire radial aspect of the finger distal to the site of freezing. The loss of sensation was sufficiently marked to impair the ability to grip objects between the thumb and finger. In another patient, liquid nitrogen was used to remove a keratotic lesion located on the dorsum of the left hand. The treated area healed satisfactorily but the patient developed hypesthesia and hypalgesia of the ulnar half of the first and second phalanges of the second finger and of the dorsal portion of the finger web joining the second and third fingers. Liquid nitrogen should not be applied to sites where nerves are known to lie close to the skin surface. The author no longer employs such treatment in the removal of warts located over the volar or lateral aspects of the proximal phalanges. In freezing lesions on the dorsum of the hand, it is now the author's practice to slide the skin back and forth over the underlying fascia in an attempt to minimize cold effects on nerves lying between the skin and fascia"—Nix (Oklahoma City, Okla.), Arch. Dermatol 92: 185, August 1965. Republished from CLIN-ALERT No. 234, August 24, 1965, by permission of Science Editors, Inc.

PARNATE-AMPHETAMINE

Near-Fatal Hyperpyrexia

A 41-year-old woman experienced a near-fatal hyperpyrexic reaction (temperature 109.4° F) a few hours after taking, concurrently, 10 mg amphetamine and 10 mg Parnate (tranylcypromine). Corrective therapy was instituted and the patient made a full recovery. The author attributed the reaction to combined ingestion of the two drugs.—Lewis (Baltimore, Md.) British M J 1: 1671, June 26, 1965.

[In a recent discussion of psychotherapeutic agents ("Tranquillity—at a price"; Clin Pharmacol & Therap 6: 417, 1965) Dr. Leo E. Hollister offered this observation: "Certainly one should not become so concerned with adverse reactions to drugs as to develop therapeutic paralysis. Such a danger seems unlikely considering the tons of antianxiety and antidepressant drugs being prescribed. Rather, one would hope that clinicians would become more critical of the claims made for these agents and more conservative in using them."]—Republished from CLIN-ALERT No. 212, August 4, 1965, by permission of Science Editors, Inc.

BUTAZOLIDIN

Leukemia

Cases of leukemia occurring in patients treated with Butazolidin (phenylbutazone) have been reported (Clin-Alert No. 51, 1962; Clin-Alert No, 102, 206 & 258, 1964; Clin-Alert No, 121, 1965). The present authors observed a 57-year-old arthritic patient who developed suggestive symptoms after receiving Butazolidin in therapeutic dosage for something over one year. At autopsy the relevant findings were confined to the lungs, spleen and bone marrow. The cause of death was recorded as necrotizing bronchial pneumonia and acute monoblastic leukemia. It is of interest to note that the patient's sister died at age 61 of chronic myeloid leukemia. The sister had not been treated with Butazolidin.—Golding et al. (Harrogate, Yorks), British M J 1:

1673, June 25, 1965. Republished from CLIN-ALERT No. 215, August 4, 1965, by permission of Science Editors, Inc.

PREVENTIVE MEDICINE NOTES

Thayer, J. D.; Frank, P. F. and Martin, B. A., Jr. —In the article entitled, "Thayer-Martin Selective Medium For The Cultivation of *Neisseria Meningitidis* From the Nasopharynx," the authors report on a medium which enables *Neisseria meningitidis* to be cultivated while selectively inhibiting most of the normal flora of the nasopharynx. The use of this medium increased the detection of meningococcal carriers by 50%. This medium could be useful, particularly in surveillance programs. AJPH 55(6): 923–927, June 1965. (PrevMedDiv)

DENTAL SECTION

Naval Dental Research Reports

Continuing the schedule of the previous five issues of the *U. S. Navy Medical News Letter,* this issue presents abstracts of the 9th and 10th reports of the Naval Dental Corps' intramural research at the 43rd General Meeting of the International Association for Dental Research, with permission of the Editor, Journal of Dental Research. The research backgrounds of Mancewicz, Hoerman, Balekjian, and Shklair were presented in previous issues of this series. J. J. Hefferren, B. S., M. S., Ph.D. (Biochemistry) is Director, Division of Chemistry, American Dental Association, Chicago, Illinois. H. M. Busch, D.D.S., is a Research Associate, University of Illinois College of Dentistry. Collaboration in this manner, with colleagues of other institutions, gives both strength and breadth to the Naval Dental Corps' intramural research program.

LUMINESCENCE OF ENAMEL TREATED WITH STANNOUS SALTS

S. A. Mancewicz, K. C. Hoerman, A. Y. Balekjian, and J. J. Hefferren, American Dental Association, Chicago, Ill. and Naval Medical Research Institute, Bethesda, Maryland.

Powdered human enamel was exposed to aqueous solutions of stannous fluoride, stannous chloride and sodium fluoride. Luminence of treated enamel was examined in the solid state (KBr pellets) at 89° K. Treatment with $SnCl_2$ and SnF_2 significantly reduced the luminence of enamel although that treated with NaF showed little change. The excitation and emission maxima remained identical with those of untreated enamel (ex ^{280} mu, em ^{440} mu, uncorrected). Enamel, mixed mechanically with solid stannous salts, exhibited the anticipated decreasing luminence resulting from an increase of additive compound. However both maxima shifted to longer wavelengths with $SnCl_2$ at and above 1% concentrations. With SnF_2 there was a gradual similar shift of emission maxima. The dimunition of luminence may be due to the incorporation of stannous ion, although stannous ion has not been cited as a quencher. There is also the possibility of a pH effect.

DETERMINATION OF FLUORIDE IN PAROTID SALIVA OF CARIES RESISTANT NAVAL RECRUITS

Hirsh M. Busch and I. L. Shklair, Univ of Illinois, College of Dentistry, and Dental Research Facility, USNTC, Great Lakes, Ill.

Determinations were made of the fluoride concentration in parotid saliva of caries resistant naval recruits whose drinking water contained 1.0 ppm fluoride. Paraffin stimulated parotid saliva was collected employing a modified Carlson-Crittenden cup under standardized conditions. For each parotid saliva collection, flow rate and total lyophilized solids were correlated with fluoride content. The fluoride content of the lyophilized specimens was determined by the modified microdiffusion technique of Rowley and Farrah (Amer Ind Hyg Assoc 23: 314, 1962), and Wharton (Anal Chem 34: 2196, 1962). The range of fluoride found in the parotid saliva was 0.12 to 0.55 ppm. The results indicated that no correlation existed (a) between fluoride content and flow rate, and (b) between fluoride content and total solids.

STUDIES ON SYNERGISTIC INFECTIONS

II. Disaggregation of Ground Substance in Rooster Wattle Infections. Thonard, J. C., Mergenhagen, S. E., and Scherp, H. W., Jour Infect Dis 114(1): 31–38, Feb 1964.

This publication presents fascinating evidence on enzyme influences of common oral bacteria on con-

nective tissue. Application to dental infections, e.g., periodontal disease, is clearly implied. Continuing research on this subject should provide new knowledge relative to progression of endodontal and periapical infections.

Wattles of nine to 12-month-old White Leghorn roosters were used as a model for histochemical study of the hyaluronidase factors effecting depolymerization of tissue ground substance components. The bacteria used were selected for their known potential for causing spreading infections: (1) a non-hyaluronidase-producing oral anaerobic *Streptococcus* (strain SM), (2) a hyaluronidase-producing oral anaerobic *Streptococcus* (strain JR_1) producing some chomdroitinase, and (3) a hyaluronidase-producing hemolytic *Straphylococcus aureus* (strain SAB_2). These microorganisms either singly, combined, or with hyaluronidase preparations of animal or bacterial origin, were injected intradermally. The paired wattle was injected with heat-inactivated preparations, to serve as control. Wattles were partially clamped to promote hemostasis for 12 hours after injection, and amputated for histological preparation after 48 hours. From tissues fixed in 95 percent alcohol or ten percent formol saline, sections were stained with Hale's iron absorption stain, toluidine blue at pH6 and 2.5, and periodic acid-Schiff stain. The rooster wattle ground substance was rich in hyaluronic acid which was removed by infection with hyaluronidase-producing microorganisms, as well as by the control hyaluronidases.

PERSONNEL AND PROFESSIONAL NOTES

AUTOCLAVABLE NYLON WRAPPING FOR DENTAL INSTRUMENTS. Standard Stock items FSN 6530–826–1297 and FSN 6530–826–1298 have been subjected to definitive test by the Dental Research Facility, U. S. Naval Training Center, Great Lakes. This nylon is a clear, strong plastic material. It does not tear or puncture easily. The tubular material can be made into bags by heat sealing or by autoclavable tape, FSN 6530–299–9821. This nylon material does allow penetration of water vapor under pressure (in contrast to polyethylene film), and thus material sealed in the nylon bags can be sterilized by autoclave.

The nylon withstands autoclave temperature (120° C), as well as cold storage (—20° C). If sharp instruments are to be sterilized or stored in the bags, care must be taken to prevent puncturing the nylon. Cutting edges of scalpels or chisels can be wrapped in gauze or cotton rolls, before being placed in the nylon bag.

Three test microorganisms, *Serratia marcescens, Bacillus subtilis var. globigii* and *Bacillus stearothermophilus* were used to deliberately contaminate a variety of dental instruments, including mouth mirrors, rubber dam clamps, burs, hypodermic needles, and syringes. Bagged instruments autoclaved at 120° C for 15 minutes were routinely sterile, immediately and after shelf storage up to 37 days. Prolonged autoclaving up to 2 hours at 120° C had no recognizable deleterious effect on the bags, nor on sterility of contents. Repeated use of the bags produced erratic results, in that the contents were not routinely sterile after 2, 3 or 4 usages. Vacuum drying of instruments in sealed bags was routinely acceptable.

In the dry heat sterilizing oven, the nylon bag turned brown within one hour at 140° C and brittle at 160° C. In boiling water the instruments became very wet and the sealing tape did not hold well; and it was not possible to dry the instruments without their removal from the bag.

In reference to Policy on Sterilization, *U. S. Navy Medical News Letter* 44(1): 22 of 3 July 1964, the subject nylon tubing is considered acceptable for bagging dental instruments for autoclave sterilization and for shelf storage of sterile instruments for periods up to four weeks.

SUGAR SUBSTITUTES IN PREVENTIVE DENTISTRY. The cariogenic effort of between-meal, sugar-containing snacks is well established. The rate of caries attack is known to be directly related to the *frequency* of sugar consumption. (Weiss, R. L., and Trithart, A. H., Am Jour Pub Hlth 50: 1097, Aug 1960).

In spite of these established facts, probably due principally to the difficulty of changing habits, great numbers of people continue their habitual between-meal confection and sugar-cola consumption. In an effort to minimize the cariogenicity of between-meal sugars without interfering with the patient's habits, many dentists have urged their patients to substitute non-sugar snacks, such as nuts. The advent of non-sugar sweeteners during recent years has made non-sugar confections and colas available.

In a research report entitled, "Comparison of

some common cariogenic foods and beverages with noncariogenic equivalents," presented at the 43rd General Meeting of the International Association for Dental Research, R. M. Stephan and F. R. Shaw presented experimental evidence on the preventive dentistry value of non-fermentive sugar substitutes. Experimental rats were fed a basic noncariogenic diet for two hours each day and distilled water ad libitum throughout the experimental period. Sub groups of 20 animals each were provided a variety of "sugar-containing" and alternative "sugar-free" food supplements for consumption ad libitum. After 28 days, the following caries scores were observed.

Dietary Supplement	*Caries Score*
Control diet only	0.0
Sugar-containing cola	47.3
Diet cola (sugar-free)	0.0
Vanilla wafer (sugar-filled)	16.9
Vanilla wafer (sugarless filling)	1.8
Caramel-coated popcorn	18.6
Popcorn	0.1
Sugar-coated cookie	21.6
Sugar-free cookie	1.3
Evaporated milk infant formula	
with Karo syrup	9.1
with dextri-maltose	4.1
with no added sugar	0.1

This study furnishes experimental evidence on the logic of excluding sugar from between-meal snacks, and for substitution of sugar-free sweets. U. S. Naval Dental Officers are encouraged to use this evidence in patient education, and to convince supply officers of the importance of stocking vending machines and Navy Exchanges with sugar-free candies and colas.

DENTAL OFFICER PRESENTATIONS. CAPT James B. Lepley, DC USN, U. S. Naval Dental School, Bethesda, Maryland, presented a paper entitled, "Use of Silastic in Somato Prostheses," before the Annual Meeting of the American Academy of Maxillofacial Prosthetics, held 4–5 November 1965, in Las Vegas, Nevada.

CAPT Thomas J. Pape, DC USN, U. S. Naval Training Center, Great Lakes, Illinois, presented a lecture entitled, "Traumatic Facial Injuries," before members of the U. S. Naval Reserve Dental Company 9–6, on 16 September 1965, in Evanston, Illinois.

GRADUATE EDUCATION. All graduate and/or post-graduate training supported by the U. S. Naval Dental Corps has as its purpose a broadening of the knowledge of the dental officer that will reflect a greater clinical proficiency. With each passing year, a greater emphasis is placed upon the relationship of the basic sciences to their clinical application. This has been noted recently by the long, hard look that graduate schools have given the basic science grades on *pre-dental and dental school* transcripts of those officers who have submitted applications for long courses of study at civilian universities. Many universities have established the requirement of a B average in all basic science courses as a prerequisite for admission to their graduate schools. Accordingly, officers intending to file requests for such training might introspectively consider past records prior to filing applications for graduate study.

In regard to present educational philosophy as it relates to medicine and the basic sciences, attention is directed to, "Symposium—Medicine and Its Basic Sciences," as published in the *Journal of the American Medical Association* 193(7): 583–594. ". . . the responsibility of the basic sciences is to prepare the student with an approach to his clinical years which permits him to challenge old ideas and practices with new concepts but which, hopefully, has been acquired from the basic sciences in a manner which allows for critical and rational judgement." Quoted from the above reference, the preceding paragraph in brief presents the logic of the graduate school emphasis upon a sound basic science background.

APPLICATIONS FOR ADVANCED TRAINING. Dental Officers intending to submit applications for enrollment in long courses of instruction during Fiscal Year 1967 are reminded of a change in the convening date of the Dental Training Committee. The Committee will meet early in January 1966, to act on applications for the Graduate and Postgraduate Courses presented at the U. S. Naval Dental School, Postdoctoral Fellowships, Residencies, and long courses at civilian universities.

Accordingly, all applications for such training must be *received* in the Dental Division, Bureau of Medicine and Surgery, not later than 1 December in order to permit sufficient time for processing.

Information for advanced training is contained in BUMED INSTRUCTION 1520.2H of 10 May 1965, and MANMED 6–130.

PATIENT PAMPHLETS AVAILABLE. *The Care of Your Dentures,* NAVMED P–5058, and *The Care of Your Teeth and the Prevention of Dental Disease,* NAVMED P–5039, have been recently revised and

are now available for distribution through the supply system. The former editions will continue being issued until present stocks are exhausted.

MILITARY SEMINAR FOR NAVAL RESERVE DENTAL OFFICERS. A military seminar for Naval Reserve Dental Officers will be held on 6 December 1965, in conjunction with the Greater New York Dental Meeting, at Penn Top North, Statler-Hilton Hotel, New York City, from 1600 to 1800. One point will be credited for attendance in uniform.

DENTAL OFFICER RETIREMENTS DURING 1ST QTR FY 1966.

RADM Clifford C. DeFord DC USN
CAPT Frank W. Cook DC USN
CAPT William E. Crolius DC USN
CAPT Dillard P. Eubank DC USN
CAPT Arthur R. Frechette DC USN
CAPT Walter F. Hanley DC USN
CAPT Norwood E. Lyons DC USNR
CAPT George E. Madden DC USN
CAPT Wilbert C. Manke DC USN
CAPT Emmet L. Manson DC USN
CAPT Harold J. Ralston DS USN
CAPT Jack W. Robinson DC USN
CAPT William H. Snyder DC USN
CDR Everard F. Jones Jr. DC USN

DENTAL OFFICERS SELECTED FOR PROMOTION. The following dental officers were recently selected by Naval Examining Boards for promotion to the ranks indicated. Letters of congratulation have been sent to each individual by the Chief of the Dental Division.

TO CAPTAIN

Frank A. Marmarose DC USN
Donald R. Bassett DC USN
William J. Rogers Jr. DC USN
George H. Green DC USN
Edward F. Sobieski DC USN
Bernard Chap DC USN
Frank P. Beall Jr. DC USN
James H. Scribner DC USN
Corey H. Holmes DC USN
Jack D. Mahoney DC USN
Homer S. Samuels DC USN
Thomas D. Stephenson DC USN

TO COMMANDER

Kenton T. Bradley DC USN
Lloyd E. Hembre DC USN
Philip R. Falcone DC USN
Jack E. Hyde DC USN
Robert E. Shirley DC USN
Lowell E. Slagle DC USN
James D. Enoch DC USN
Jefferson F. Hardin DC USN
Charles G. Evans DC USN
Norman K. Luther DC USN
Thomas L. Whatley DC USN
Henry Muller III DC USN
Harris J. Keene DC USN
William R. Shiller DC USN
Eugene A. Watkins Sr. DC USN
William R. Cotton DC USN
Roy C. Corderman DC USN
Robert A. Vessey DC USN
Robert A. Gaston DC USN
Clyde R. Jackson DC USN
Tennyson J. Lommel DC USN
Richard D. Ulrey DC USN
James F. Scott DC USN
Richard D. Prince DC USN
Robert W. Longton DC USN
Chester J. Schultz Jr. DC USN
Robert E. Timby DC USN
John Koutrakos DC USN
Emidio J. Collevecchio DC USN
Philip W. Strauss DC USN
John R. Russell DC USN
Ralph E. Sand DC USN
Howard S. Tugwell DC USN
Richard D. Collier DC USN
Clyde L. Fulcher DC USN
Charles N. Clark III DC USN
Joseph J. Lawrence Jr. DC USN
Alfred O. Brault DC USN
Kenneth K. Kaneshiro DC USN
James F. Kelly DC USN
Thomas M. Allensworth Jr. DC USN
Ollie V. Hall Jr. DC USN

DENTAL TECHNICIANS AUTHORIZED FOR ADVANCEMENT. The following dental technicians have been authorized for advancement to Chief Dental Technician on the dates indicated. Letters of congratulation have been sent to each individual by the Chief of the Dental Division.

16 November 1965

P. G. Beno	NAS Quonset Point, R.I.
A. L. Disney	NAS Memphis, Tenn.
J. E. Hartman	COMSTA Guam, Marianas
R. T. Weber	NDC Yokosuka, Japan

16 January 1966

W. J. DeBaum NAVSTA Annapolis, Md.

16 March 1966

C. M. Vida HQ SUPPACT Taipei

NUCLEAR STUDY INCLUDES DENTAL TISSUES. A study of dental, eye, and thyroid characteristics of 2,000 public school students in Washington County, Utah, was announced recently by the Surgeon General of the United States and Dr. G. D. C. Thompson, Director of the Utah State Department of Health.

These studies are an additional phase of a long-term investigation being conducted jointly by the State Health Departments of Utah and Nevada and the Division of Radiological Health of the Public Health Service, U.S. Department of Health, Education, and Welfare. Beginning in 1959, as an examination of leukemia death occurring in Utah and Nevada since 1950, the investigation was expanded in 1963 to include thyroid and bone cancer and congenital malformations. The studies are attempting to determine whether a statistically meaningful relationship exists between these naturally occurring defects and radiation exposures that might have been received in the 1950's from Nevada Test Site fallout. In the new studies, tissues that might be expected to show effects if damaged include those in which a limited number of cells comprise the structure. A defect in one cell or a few cells would thus be apparent in the appearance of the tissue. The teeth and the iris of the eyes represent structures of this type. In addition, they are visible for rapid examination without discomfort to the subject. Color changes in the iris and small spots or pits in the tooth enamel were cited by PHS scientists as examples of effects which might have occurred.

The thyroids of an approximately equal number of students in Safford, Arizona, also will be examined as a "control" for comparison with the thyroid observations made on the Utah students. Safford is several hundred miles farther away from the test site, but otherwise has many environmental and other factors similar to the Utah study area. The examinations which began on September 17 at St. George, Utah, will be conducted by the Public Health Service's National Institute of Dental Research, National Institute of Arthritis and Metabolic Diseases and Division of Radiological Health. The Utah State Department of Health is cooperating in all phases of the total study.

PHS dentists will examine the Washington County, Utah, students for tooth, bone, and soft tissue abnormalities possibly attributable to radiation exposure. PHS physicians will independently examine each youngster by external observation for eye and thyroid abnormalities. Any students in whom findings indicate a possible need for follow-up will be referred by the State Health Department to private physicians or dentists.

In a fourth procedure not related to possible effects of radiation exposure, scientists will examine student ability to taste and smell a number of chemicals. The ability to taste or smell certain chemicals has been known for many years to be under hereditary control. It also has been known that the ability to taste the compound phenylthiourea is related to glaucoma, decay rates in deciduous teeth, and goiter. The nature of these physiological associations will be a subject of the investigation. The ability to smell specific odors may possibly represent a new set of genetic patterns similar to the human blood groups. If this is proved to be the case, it would be of great value in the study of human genetics.

PREVENTIVE MEDICINE SECTION

CAPTAIN JOHN R. SEAL MC USN (Ret)

Doctor John R. Seal retired on 30 August 1965 with the rank of Captain, after 23 years of service in the Medical Corps of the U. S. Navy. For the past 4 years, Doctor Seal has been the Commanding Officer of the U. S. Naval Medical Research Institute, Bethesda, Maryland, where he directed the biomedical research programs in this country and abroad. Prior to this position, Doctor Seal was the Commanding Officer, U. S. Naval Medical Research Unit, Cairo, U. A. R.

While in the Navy, Doctor Seal's interests gravitated toward infectious diseases and research administration. From 1954–1958, he was the Head, Communicable Disease Control Branch and Head, Tropical Diseases Branch of the Preventive Medicine Division, Bureau of Medicine and Surgery. Prior to that Dr. Seal served as Officer-in-Charge of the U. S. Naval Medical Research Unit No. 4, both at Dublin, Georgia and at its present location, Great Lakes, Illinois.

He also has served on the Armed Forces Epidemiological Board and its commissions on acute respiratory diseases, immunizations, influenza, streptococcal diseases, enteric diseases, viral infections and rickettsial diseases. In addition, he served as Chairman of the World Health Organization Influenza Advisory Committee (DOD, PHS).

Doctor Seal was appointed Director of Intramural Research of the National Institute of Allergy and Infectious Diseases, National Institutes of Health, U. S. Department of Health, Education and Welfare, Public Health Service. In his new position, Doctor Seal will be responsible for the direction of NIAID's 9 laboratories at Bethesda, which constitute one of the largest and most diversified research complexes in the world for the study of allergies and infectious diseases. He will also direct and coordinate research at NIAID's Rocky Mountain Laboratory in Hamilton, Montana and its Middle America Research Unit, located at the Gorgas Memorial Laboratory, Panama Canal Zone. Doctor Seal has been a member of the Institute's Board of Scientific Counselors since 1961 and he has studied its intramural research programs and advised its Director on program emphasis and direction.

Doctor Seal is a member of numerous scientific societies, including the American Association for the Advancement of Science, the American Public Health Association, the American Medical Association, the Association of Military Surgeons (Life membership), and the American Association of Medical Writers. He was awarded the Navy Commendation Medal and the Association of Military Surgeons' Founders Medal and its Stitt Award. He is a Fellow of the American College of Physicians and an Honorary Fellow of the Egyptian Public Health Association.

Doctor Seal is the author or co-author of numerous published articles.

Doctor Seal is a native of Charleston, W. Va., and received his M.D. degree from the University of Virginia School of Medicine. Doctor and Mrs. Seal live at 4517 Cumberland Avenue, Chevy Chase, Md. —PrevMed, BUMED.

ENCEPHALITIS SURVEILLANCE—1964

Vector Control Briefs, HEW, PHS, Issue No. 15, p. 2–3, Aug 1965.

A total of 582 confirmed and presumptive cases of arthropod-borne encephalitis in 1964 were reported to the Encephalitis Surveillance Unit. Totals for 22 states included 470 cases of St. Louis encephalitis, 64 cases of Western encephalitis, 42 cases of California encephalitis, 5 cases of Eastern encephalitis, and 1 case of Tensaw encephalitis.

Major outbreaks of St. Louis encephalitis occurred in the Camden-Philadelphia area (115 cases and 10 deaths) and in Houston, Texas (*preliminary* total of 221 cases and 26 deaths).

Of the 64 cases of Western encephalitis, 31 occurred in 2 areas: Hale County, Texas, and central Colorado.

The reporting of 42 cases of California encephalitis from 4 states is of particular interest in that it suggests that CE is of public health significance and that it is widespread in distribution. Of 36 cases with known age, 34 were in children less than 15 years old.

The 5 cases of Eastern encephalitis, including 3 deaths, represent the first reported human cases of EE since 1961. Four cases were reported from 3 counties of Florida and one fatal case was reported in Georgia.

The clinical case of encephalitis due to the Tensaw virus is noteworthy since it is one of the first to be reported. This case occurred in a 13-year-old girl from Indiana, who developed illness on 17 Sept 1964.

Editor's Note: The term "Tensaw" refers to the Tensaw River in Alabama. From mosquitoes collected at a study site adjacent to this river, this virus was first isolated by CDC virologist—Drs. Roy Chamberlain, W. D. Sudia, Philip Coleman, and Telford Work.—PrevMed, BUMED.

FTA–200, FTA-ABS, AND TPI TESTS IN SERODIAGNOSIS OF SYPHILIS

Lynda L. Bradford, B.S., et. al. Pub Hlth Rpt 80(9): 797–803, Sept 1965.

In 1957, Deacon *et. al.* introduced the fluorescent treponemal antibody (FTA) test for the serodiagnosis

of syphilis. The test as originally described was reported to have a satisfactory level of sensitivity and specificity and showed promise of becoming a satisfactory substitute for the more complex, expensive, and generally unavailable *Treponema pallidum* immobilization (TPI) test.

With the introduction of improved reagents, the FTA test apparently became more sensitive but less specific. Subsequently, several modifications including the FTA–200 test were described and evaluated. The results of these studies indicated that the FTA tests were relatively specific but generally less sensitive than the TPI test, that the reactivity could be adjusted by dilution of the test serum, and that the Reiter strain of *T. pallidum* appeared to give comparable results.

In 1962 Deacon and Hunter reported that the non-specific reactions previously encountered were due to group or common treponemal antibodies. Studies indicated that the removal of these antibodies by absorption with Reiter treponemes resulted in specific staining of the *T. pallidum* Nichols strain.

Recently Hunter *et. al.* (1964) described an FTA-absorption (FTA-ABS) procedure that appears to give results which are both highly sensitive and specific. In this procedure the serum to be tested is first absorbed with a standardized preparation of sonically disrupted Reiter treponemes to remove the group or common treponemal antibody component. After removal of this "nonspecific" antibody, the serum is tested at a 1:5 dilution with the FTA technique.

This study was designed to determine the reproducibility, specificity, and sensitivity of the FTA–200 test. Comparative results with the FTA-ABS produce on a smaller number of cases also are described.

DISCUSSION

Reproducibility of the FTA–200 test is related to the degree of reactivity of the serums tested. It approaches 100% for serums that are either completely nonreactive or strongly reactive. The results obtained in this study show that day-to-day variation in readings exists, that this variation is not consistently reflected by the MR control, and that such variation may affect the reproducibility of the test in some instances. Reproducibility of borderline (1+ to 2+) FTA–200 results was 86 percent.

The FTA–200 test has a high level of specificity. The absence of reactive FTA–200 results in presumed normal groups confirms previous reports of 100% specificity. In diagnostic problem cases, the FTA–200 test appears to be only slightly less specific than the TPI test. Using TPI results as a standard, the specificity of the FTA–200 test in the problem cases was 96%. These findings are similar to those reported by Wilkinson (1961) and Miller, *et al.* (1964).

In diagnostic problem cases, the FTA–200 test was significantly less sensitive than the TPI test. In clinically diagnosed cases of syphilis, the FTA–200 test was significantly more sensitive than the TPI test in primary syphilis and of about equal sensitivity in secondary and early latent syphilis. In late latent and late syphilis, the FTA–200 test was significantly less sensitive than the TPI test. These results confirm previous reports and indicate that the use of the FTA–200 test is of limited value in the serodiagnosis of patients in these categories.

Hunter, *et. al.* (1964) have reported that the FTA-ABS procedure is not only as specific as the TPI test in presumed normal and biological false positive reactors but is more sensitive than either the TPI or FTA–200 tests in primary and late syphilis. Comparison of TPI, FTA–200, and FTA-ABS test results in the diagnostic problem cases reported in this article indicates that the FTA-ABS test is considerably more sensitive than the FTA–200 test and that FTA-ABS and TPI tests have similar levels of sensitivity and specificity. In this study the FTA-ABS procedure was more sensitive than either the TPI or FTA–200 tests in all stages of syphilis, but particularly in cases of primary syphilis.

Although the sensitivity of the FTA-ABS test appears to exceed that of the TPI and FTA–200 tests, too few serums have yet been tested to determine the true specificity and reproducibility of the FTA-ABS procedure. Deacon and Hunter (1962) have stated that non-specific FTA reactions appear to be associated with nonsyphilitic treponemal antibodies. Fife (1962) has reported that nonspecific FTA reactions can also be associated with increased macroglobulin levels. Additional studies to determine the reactivity of the FTA-ABS test in patients with diseases other than syphilis are essential to determining the true specificity of this procedure. The FTA-ABS test has been limited to date to use in research laboratories because of the problems associated with the production of a suitable absorbing antigen.—PrevMed, BUMED.

HUMAN FLEAS (PULEX IRRITANS) INCRIMINATED AS VECTORS OF PLAGUE IN BOLIVIA

BEASLEY, DR. PALMER, VECTOR CONTROL BRIEFS, HEW, PHS, ISSUE NO. 15, P. 5-6, AUG 1965.

The CDC received a request from the Bolivian Ministry of Health for assistance in the investigation and control of an outbreak of bubonic plague which had begun in mid-Jan in southern Bolivia in a rural community composed mainly of Indians.

Investigations by a team from CDC working with representatives from several Bolivian Health groups and PAHO revealed that 3 outbreaks had apparently occurred during Jan and Feb. The approximate populations, numbers of cases and deaths, and the periods of time involved may be summarized as follows:

Location	*Clinical Type*	*Population*	*Cases*	*Deaths*	*First Case*	*Last Case*
Sopachuy area	bubonic	245	95	18	1/15	2/26
Yanacolpa area	pneumonia	250	22	10	2/12	2/23
Valle Grande area	bubonic	100	29	5	1/29	3/8

Plague has been a recognized endemic problem in Bolivia since 1921 when it is said to have been introduced. The problem has been restricted to 3 departments (states) in southern Bolivia. During the twenties and thirties there were a number of moderately large outbreaks. Each succeeding decade has seen fewer reported cases, with no outbreaks since 1950 having more than 15 cases. Most of these outbreaks have occurred high on the eastern slopes of the Andes in isolated rural communities. Domestic rats do not inhabit these highland regions, but numerous sylvatic rodents have been established as naturally infected with *Pasteurella pestis,* and the recent Bolivian plague problem has been considered typical of endemic plague elsewhere in the world. The 95 cases of plague in the Sopachuy area in 1965 makes this the largest reported Bolivian plague outbreak since 1938 and raised considerable concern about what reservoirs and vectors were responsible, and fear that the problem might spread.

The epidemiological investigations in the Sopachuy area revealed a unique picture not typical of either classical domestic rat-borne plague, or wild rodent spread disease. The pattern was that of person-to-person spread disease, with high attack rates among contacts of the sick, with low attack rates among people who had no history of such contact. The community is rural and highly isolated. Houses are 1 room thatched roof dwellings adjacent to their grain fields, and usually isolated from one another by several hundred yards.

The people of the area denied the presence of domestic rats, unusual abundance of wild rodents, or any evidence suggestive of an epizootic. Observations by the team were in accord with these reports. Animal trapping revealed moderate numbers of various wild rodents in the fields and near the houses but failed to yield any domestic rats. A variety of flea species were recovered from the rodents but in low numbers, ranging from 0 to 7 per rodent.

The most startling observation was the large abundance of fleas infesting the people and their houses. The people reported that human fleas were a constant problem but that they had become unusually abundant during late Nov and continued through the time of the epidemic. Despite the use of DDT in the houses prior to the CDC team's arrival, and report that the fleas were then much reduced, some 450 were easily collected by the investigators. These have preliminarily been identified as *Pulex irritans*.

Pulex irritans has always been considered a poor plague vector, at best. It is hypothesized that in this outbreak the *P. irritans* were in sufficient abundance to allow them to be the vector of bubonic plague despite their low vector potential, once a case of sylvatic origin had occurred. Plague has not been recovered from the 450 fleas brought back for laboratory examination, but this is not surprising since most had never taken a blood meal and human cases were not occurring at the time of their capture.

It is of interest that in the Valle Grande area which has had endemic plague for decades, the problem had begun to decrease during the late 1950's concomitant with the semiannual spraying of the houses with DDT for malaria control. This practice was discontinued in 1961 and the plague problem has increased since that time.

BOTULISM SURVEILLANCE

Jour of Environmental Hlth, 27(3): 677, Nov-Dec 1964.

SUMMARY—1963

A total of 12 outbreaks of botulism accounting for 46 cases, including 14 deaths, were reported in the United States during 1963. The 46 cases during 1963 represent the highest total for any one year since 1939, the eighth highest year since 1899. Commercially canned or smoked food products accounted for 4 outbreaks and 24 cases, and home canned food caused 8 outbreaks, 22 cases.

Cases by State

The 12 outbreaks recorded this year occurred in 9 states. Tennessee, with 12 cases, experienced more cases of botulism than any other state. Tennessee's 12 cases were part of one outbreak, which also involved victims in Kentucky and Alabama, and was traced to smoked whitefish chubs. California was second with 10 cases, Kentucky third with 7 cases.

Outbreaks by State

Although California was second in total number of cases for the year, it led the states in the number of separate outbreaks. California experienced 3 outbreaks, while Kentucky and Michigan each had 2 separate outbreaks. Both of Michigan's outbreaks were related to commercial products.

Type

Type B *Clostridium botulism* toxin was identified as the etiological agent in 4 of the 12 outbreaks (11 cases). Type E toxin was identified in 3 outbreaks (22 cases), Type A in 2 outbreaks (4 cases). In the remaining 3 outbreaks (9 cases), the type was unknown.—Morbidity and Mortality Weekly Report.

KNOW YOUR WORLD

DID YOU KNOW?

That an aerosol technique of vaccinating children against tuberculosis is being tested at the University of Illinois Institute for Tuberculosis Research?

Up to a dozen children at a time play or read in a room, where the vaccine is nebulized and pumped through the room. The children breathe in enough material for apparently safe and effective immunization. One day, vapor vaccination may work for immunization against influenza, diphtheria, tetanus, whooping cough, smallpox, measles and poliomyelitis. It might be done in school classrooms or in playrooms, sidestepping the needle route. (1)

That during November and December 1964, 29 individuals were treated for diphtheria at the Los Angeles General Hospital?

In November, the cases occurred in 5 clusters with 3 deaths in 4 of the 24 health districts. One of these clusters, involved 5 families and 15 cases. In late December, 6 cases with 1 death occurred in a 6th cluster. As determined, there was no contact between the 6 groups. (2)

That Malaya is completely free from cholera, Kemamen District (Trengganu State) having been declared free on 26 January 1965?

The last reported case occurred on 26 December 1964. The first cases of the recent outbreak of El Tor cholera occurred in November 1963. In total, 531 cases and 148 deaths have been reported in 9 states of Malaya. (3)

That the first American military man to be decorated for a wound, shot with an arrow from ambush, since the Indian wars?

The victim who received the Purple Heart medal given to those wounded by enemy action, is CAPT Francisco I. Pena MC USA, 27, a 1962 graduate of the U. of Texas Medical Branch of Galveston. CAPT Pena, who plans to enter private general practice in McAllen, Texas, presently is assigned to duty in the Army's Beaumont General Hospital, El Paso, Texas. He has been awarded 5 Air Medals for his work with a helicopter unit in Vietnam, as well as the Bronze Star for gallantry.

When he was hit by the arrow last May 1964, he was driving a jeep, alone, near Qui Nhon in Vietnam. The arrow, a bamboo one of the type fired from crossbows, came from somewhere in the brush beside the road, piercing his left thigh. There was Viet Cong activity in the area.

CAPT Pena drove on for 10 minutes, reported what had happened at a military compound, then removed the arrow himself at a dispensary. Up to that time, CAPT Pena said, he had not heard of any

arrow wounds in Vietnam, although wounds from stakes in traps were similar. But, about 2 months later, a lieutenant was hit in the arm with an arrow. "I went over to sympathize," said CAPT Pena, "I told him I knew just how it feels." (4)

That for the current fiscal year, the federal appropriation is $10,030,000 to the venereal disease program?

The 22,733 infectious syphilis cases reported in 1964 were the greatest number reported since 1950. Reported gonorrhea victims increased from 270,076 cases in 1963 to 290,003 in 1964. (5)

That a 5th case of human plague, which proved fatal, occurred among the Navajo Indians in McKinley County, New Mexico?

The patient, a 14-year-old boy from Red Rock, approximately 10 miles south of Gallup and within 2–3 miles of the home of the first case reported in early June. The boy was admitted to the Division of Indian Health Hospital at Gallup in the late afternoon of 26 August with headache, fever, and anorexia of sudden onset 1 day previously. In the afternoon of 27 August, his condition worsened and clinical evidence of pneumonia developed; he died at 10:15 p.m. Laboratory confirmation of *Pasteurella* pestis has been obtained in blood cultures and lung tissue. The patient is considered to have had septicemic plague which developed into pneumonic plague while he was in the hospital. No symptoms of plague in the other 7 members of the boy's family. Field investigations are continuing in the areas known to be affected by the epizootic among wild rodents (prairie dogs). On 27 August 1965, *Pasteurella pestis* was confirmed by fluorescent antibody test and isolation in two carcasses of prairie dogs found on 23 August at Tinion, New Mexico, around the home of the 4th human case, which occurred on 14 August 1965. (6).

That for the first time since October 1960, on 27 August 1965 cholera was reported from Nepal?

From 15 June to 25 July 1965, 41 cases, with 2 deaths were notified in Katmandu, 6 deaths in Parasa, 20 deaths in Saptari, 300 cases (40 deaths in Bhairawa (Butwal district), and 376 cases, with 29 deaths) in the region of the Narayani River occurred. The latter 2 foci are in the south of the country, near the boundary between the Indian states of Bihar and Uttar Pradesh. The epidemic is due to both El Tor cholera and classical cholera. (7)

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ARTHROPOD-BORNE VIRAL ENCEPHALITIS (PART II)

The specific *mosquito-borne* encephalitides in man and animals are as follows:

1. *Eastern and Western encephalitis,* formerly called the equine encephalitides because man and horse suffer alike clinically, are distinct entities immunologically, are endemic to their respective parts of the United States with great overlap, and are nearly indistinguishable in clinical picture between themselves or among other arboencephalitides, and polio.

2. Both diseases became important public health problems in the early 1930s when sudden epidemics in humans coincided for the first time with apparently similar outbreaks in many horses and mules in each area. Such epizootics in animals were well known to farmers and veterinarians for some time but the agent had never been identified. Isolates from the brain tissue of human and animal fatalities established each "horse disease" as henceforth a recognized disease of humans as well, and that the eastern and western viruses were distinctly different strains. Regular outbreaks of each type have occurred among humans since that time.

3. Both are chiefly bird reservoir-mosquito vector diseases with the eastern form much more serious in residual and fatality than the western (90% vs. 25–30%). A successful vaccine for horses and mules is in use; there is none for man.

4. The onset of the syndrome in each acute rise in temperature to 103° to 105° F where it remains until the typical crisis 6–10 days later sees its sudden drop and rapid recovery of the patient. Convulsions are common and coma occurs rapidly and remains throughout the course. Death will occur in the first few days of illness. The stiff back sign of meningitis is common. Children with these diseases appear bloated around the head and trunk.

5. The western virus is responsible for more sub-

clinical cases diagnosed only in the laboratory and relatively benign in sequelae. The majority of the survivors of eastern encephalitis are left with severe central nervous system residuals of some form of brain damage, muscle wasting, and paralysis.

6. *Eastern encephalitis* is distributed along the Atlantic and Gulf coasts, and inland in the Mississippi Valley in limited areas. Foci are said to be in fresh water swamps such as the cedar bogs of eastern Massachusetts. The hosts are man, horses and birds, including large populations of pheasants. Vectors are *Culiseta melanura,* which rarely bits man but consistently infects birds, *Aedes sollicitans,* and *vexans,* and possibly *Mansonia perturbans.*

7. *Western encephalitis* is distributed in all the states west of the Mississippi, in Wisconsin and Illinois, and in isolated areas farther eastward. Its hosts are also man, horses, and birds. In both of these forms, small rodents are thought to constitute minor reservoirs; and man and horses are dead-end victims of this disease. The vectors are *Culex tarsalis* and possibly *Aedes, Anopheles, Culiseta* species.

8. *St. Louis encephalitis* is a mosquito-borne, summer and fall illness found all over the United States west of the Mississippi, and in the Ohio River Valley. The first large epidemic of its kind occurred in St. Louis in 1933 with 1,000 cases from a virus not previously recorded. This outbreak is oddly coincidental with those of the equine encephalitides that also exploded early in that decade. In just a few short years the United States was covered with eastern, central, and western types of encephalitogenic viruses very important to the public health, but the coincidence apparently was of little significance to the epidemiologist.

9. Since then, sporadic outbreaks of explosive epidemics have been seen annually in a spreading pattern. Florida, for example, had its first recognized cases in 1957 followed by outbreaks in 1958, 1959, 1961, and 1962. The latter was an outbreak of 230 cases in the counties of the Tampa Bay area in which 40 or more deaths occurred. No cases were reported in Florida in 1963.

10. The highest incidence of St. Louis encephalitis seems to be in the 15–50 age group, with a tendency to spare young children. Five to 30% of the victims of this disease die with mortality roughly proportional to age. Those who recover as a rule are not usually bothered by troublesome or disastrous sequelae. In the Tampa epidemic, the victims were the very young and old; far more whites than nonwhites fell ill.

11. Entomological studies of these recent outbreaks in Florida reveal that in addition to the above geographic distribution, southern Florida and various Caribbean areas constitute static source regions of considerable arbovirus activity.

12. The *host* is chiefly a bird, but an avian mite (*Dermanyssus gallinae*) acts as vector and host by transmitting the virus to its progeny transovarially. Birds do not fall ill when infected.

13. The vector from bird to man is the *Culex* mosquito (*pipiens, quinquefasciatus, tarsalis, nigripalpus*). The *Culiseta melanura* swamp mosquito is a recognized natural vector among birds, and although rarely biting man, plays a large role in maintaining the virus reservoirs in nature.

14. The *virus* is of the "small" variety, measuring 20–30 mu with an incubation period in man from 4–21 days. Laboratory studies point out the rather odd similarity of St. Louis virus to the widely separated strains of Japanese B (in the orient and western Pacific), Murray Valley (Australia), and Russian Spring-Summer tick-borne types of the European areas.

15. *Japanese B* (for laboratory group B) encephalitis ranges from India through southeast Asia to Japan and the eastern Pacific Islands to Guam. It is said to rank high with eastern encephalitis among all these diseases in incidence of neurologic damage and mortality, but this is variable. The disease picture is typical; after incubation for 8–15 days, there is a rapid rise in temperature to 104° to 105° F where it remains for 10 days with great prostration and sensorial depression of all degrees, followed by rapid return to clinical health.

16. Rapid modes of transportation have enabled at least 2 recent incubation cases of Japanese B encephalitis to become clinically apparent after the persons reached the United States from the Orient, and the possibility of accidentally transporting infectious mosquitoes or ticks is clear.

Of 6 recognized *tick-borne encephalitides* in the civilized world, Russian Spring-Summer encephalitis (RSSE), diphasic meningoencephalitis (DME), Louping Ill (LI), and Powassan encephalitis (PE) deserve some emphasis. The encephalitic syndrome in these entities is identical to the mosquito-borne types. The RSSE virus of eastern Europe carries a much higher risk of neural damage and death than does the western European group, consistent with the pattern of eastern and western encephalitides in the United States.

Unlike the more distinctive mosquito-borne strains, all the viruses in this group are closely re-

lated immunologically and are difficult to differentiate in the laboratory. They appear to be merely clinical modifications of one another with geographic preference for various parts of the European world.

1. The "typical" RSSE is found in eastern or Asiatic Russia, and is a one-phase (no relapsing tendency) illness with high risk of neuropathic sequelae or death, very much like the eastern encephalitis of the United States. The other forms mentioned above are the much milder western European modifications of RSSE and are found from Scandinavia through central Europe, to Britain and India.

2. Goats and sheep are the principal *hosts,* and reservoirs of the whole group, although it appears that a wide variety of large and small animals can also carry the virus and demonstrate clinical illness, including a number of migratory birds. The tick itself is a reservoir through its ability to transmit the virus transovarially. Man falls victim by either ingesting the milk of infected sheep or goats, or by the bite of the tick vector (*Ixodes, Dermacentor, Haemaphysalis* in Asia; *Ixodes* in Europe).

3. Clinical disease of the western European forms can be quite mild to asymptomatic, but moderate illness consists of a first phase, general systemic syndrome typifying viral invasion with headache, fever, malaise, generalized aching and intestinal disturbances lasting 5–10 days. A 4–10 day period of improvement then follows, and then 8–12 days of relapse wherein meningoencephalitis usually appears, hence the diphasic name. Convalescence is prolonged (2 to 12 months) but recovery without sequelae is usual.

4. *Louping Ill* disease of sheep (and goats) of the British Isles follows the same pattern and is probably transmitted to man as DME through raw milk.

5. None of this complex has yet migrated to the western hemisphere although the *Powassan* virus (first isolated in man in Powassan, Ontario) is said to be "related" to RSSE. Very little is known about this strain. The one recorded case in 1958 (and recorded as such in 1963) was acute in onset and rapid in decline to death in 6 days.

6. To date the only tick-borne virus disease in the United States is Colorado Tick Fever. It is a relatively mild disease. In children symptoms of encephalitis or meningitis may occur. In an adult infection there usually is sudden onset with a chilly sensation, general aching and fever rising to 102–104° F. These symptoms continue for 2–3 days and recur after a 1–2 day period without fever. The virus of Colorado Tick Fever is maintained in nature by a cycle of infection between larval and nymphal wood ticks, *Dermacentor andersoni,* and their small mammalian hosts. The principal mammal host is the golden-mantled ground squirrel, *Citellus lateralis.* Colorado Tick Fever is found throughout the Western United States, including all the states west and north of Colorado.

In 1964, over 1,000 cases suspected of being arbovirus encephalitides were reported to the encephalitis surveillance unit of the Communicable Disease Center in Atlanta, Georgia, an increase of nearly 400 over the preivous record of 1956. The 1,000 cases consisted of 6 discrete outbreaks of St. Louis encephalitis, 2 mixed SLE and WE, 1 each of WE, and California. Of the 6 SLE outbreaks, those in New Jersey and Philadelphia areas were the first of this type recorded east of the Allegheny Mountains excepting the Florida epidemics. In all, 54 deaths resulted, attesting to the fact that the mosquito-carried viruses kill many more people in the United States than do snakes.

Although the urbanite is seldom concerned about it, the segmented, chitinous arthropod and its control is a serious matter to many people in many sections of the United States as a considerable nuisance and as a threat to health as a disease vector. Entomologists and virologists continually survey the continental United States with improved insect collecting techniques, laboratory methods, and statistical analyses from which are derived the up-to-date information on the population trends of the arthropod vectors, on how to best effect their control, and perhaps even to predict or forestall a mosquito-borne epidemic of encephalitis. Meaningful and useful information pertaining to these epidemics accrues only through the labors of many entomologic field workers who must find their necessary tasks at times very tedious. Some idea of the painstaking investigation of such epidemics conducted by the Communicable Disease Center Vector Control Units in various geographical areas is implied in its arbovirus Vector Laboratory Report for the 1964 encephalitis epidemic season. Six vector control units from Texas to Indiana tested 2,257 separate pools from which they collected 85,147 mosquitoes, each of which the arbovirus laboratory processed. Twenty-nine SLE isolations were made and the mosquito carriers identified.

The prevention and control of these dread diseases will very likely be a problem for many years to come. Vector abatement is still the ultimate aim when feasible in attacking all the arbovirus diseases. Heavy rains and floods initiate mosquito population explo-

sions and thus potentiate enormously the possibility of an encephalitis epidemic. In Arizona in 1964, heavy duty fogging and larviciding equipment was obtained from money in the Governor's emergency fund and used extensively throughout the state during these conditions.

Such efforts are often expensive and can be an economic burden to land operators and rural communities, who frequently finance local control programs from their own pockets, or through tax levies. Farmers who irrigate their lands find they also cultivate mosquitoes and are obligated to initiate control measures, and many western communities have purchased vector control equipment.

Despite this emphasis on rural efforts at control, the city dweller is hardly protected from, or immune to, the onslaught of an encephalitis epidemic, and indeed has often been host to the largest and most frequent outbreaks of encephalitis on record.

The publications, NAVMED P–5052–14, "Viral Infections of the Central Nervous System," 30 June 1959, and the "Control of Communicable Diseases In Man," 10th Edition 1965, provide information on the prevention, detection and treatment of the diseases.

The World Health Organization (WHO), the American Mosquito Control Association, the Communicable Disease Center (CDC) of the Public Health Service, U. S. Department of Health, Education and Welfare, and state and local organizations in the United States can all supply reliable information on vector control to anyone requesting it.

EDITORIAL DESK

REMARKS MADE BY RADM REDFIELD MASON* AT INTERN GRADUATION CEREMONY 30 JUNE 1965.

In this mighty establishment you will now take your places as specialists whose job it will be to keep our fighting men healthy. How well you carry out your responsibilities will be shown by the overall performance of our Navy and Marine Corps. Remember! In most cases you will be the only officer qualified to handle medical problems aboard ship—or in a dispensary. The health of the men in your ship or station will be squarely upon your shoulders. I am sure that the training you have received—and your dedication to this wonderful profession—will contribute greatly to our Navy's future performance. Through the great fund of professional knowledge that you have gained, you will be able to make a highly significant contribution to the many varied naval activities you will soon be joining for duty—ships of the fleet, naval hospitals and dispensaries, and the U. S. Marine Corps. These duty assignments will provide a broad base of practical experience in your many fields of practice. These assignments will be challenging and, frequently, extremely demanding and not without personal hazard.

Consider for example, the outstanding service being performed by navy medical and dental personnel in southeast Asia. Navy medical and dental officers and enlisted men assigned in South Vietnam are engaged not only in medical support of our own and South Vietnamese forces, but in various civic action programs for the benefit of the civilian population.

Specialists in surgery, anesthesiology and orthopedics are in particularly heavy demand in South Vietnam. All are working long hours under arduous and hazardous conditions. We have asked . . . and they are giving. This is the kind of outstanding service the Navy has come to expect from the men and women of your skilled and dedicated corps.

Wherever you are stationed, you will be faced with a multiplicity of challenges to your professional ability as naval officers and as doctors. Your professions call for the application of more fields of knowledge than almost any other. You will have the opportunity to put into practice the theory you have learned during the various phases of your development leading to today's final ceremony.

You will have your ingenuity, creativity, versatility, and adaptability taxed both as a naval officer and as a doctor. There is no duality of purpose. Courage, determination, and professional ability are attributes required of all officers.

Of course, you will have all of America's tremendous medical and dental technological know-how

* U.S. Navy, Commandant, Third Naval District.

behind you in your endeavors. Research and development are fast perfecting a myriad of devices and techniques that border on the fantastic . . . material and systems that have advanced our operational capabilities far beyond the expectations of the most optimistic planners of a decade ago.

In your particular fields of medicine and dentistry there has probably been more accomplished in the past two generations than in the preceding two thousand years. The virtual armamentarium of "wonder drugs" and ingenious equipment coupled with the ever-advancing "know-how" of the medical and dental professions have contributed immeasurably to the well-being of all mankind. However, it is man, after all, in this advanced scientific age that is the controlling factor. Men fight the wars. Men make the peace. Men treat and care for the sick and wounded. Courage cannot be programmed into a computer. Dedication cannot be designed on a circuit. Your knowledge, imagination, courage and dedication must be of the highest quality.

These are attributes that are in the highest tradition of the Navy. As doctors, you will find boundless reward in saving and sustaining life, and as officers in the Navy you will have the great satisfaction of serving your country, your fellow men . . . and the free world.

To each of you, again, my heartiest congratulations, and may yours be a long and successful career.—CO, USNH, St. Albans, N. Y. (abstract).

STATION HOSPITAL, SUBIC BAY IN AN INTERSERVICE ROLL

At 0855, 20 August 1965, LT L. P. Metcalf, MSC USN, Administrative Officer of the Naval Station Hospital, Subic Bay received a telephone call from COL R. W. Martindale, MC USAF, Executive Officer, U. S. Air Force Hospital, Clark Air Force Base, Philippines, requesting personnel assistance to adequately handle several hundred U. S. Marine casualties from Chu Lai, Viet Nam. The casualties were received directly off the battlefield.

The request was for fifty hospital corpsmen. Subic Bay has 82 corpsmen assigned.

CAPT Dawson A. Mills, MC USN, Senior Medical Officer, concurred in the need, and by 1400, the last of 48 Navy corpsmen arrived at Clark. In total, 31 had been provided by Subic Bay, three by NAS Cubi Point, two by Navy Communications Station, San Miguel, and twelve by the Naval Station Hospital, Sangley Point. Additionally, Subic Bay sent four Navy nurses and two doctors.

The crisis was over when the last of the casualties departed Clark by Medical Air Evacuation in the afternoon of 23 August. Certain selected cases were retained for futher treatment at Clark and at Subic Bay.

The personnel were returned to their commands in the morning of 24 August, where they immediately continued their primary duties.

Simultaneously, Subic Bay was experiencing its historical peak census of 114 patients in its 85 authorized bed hospital. During the week, Clark hospital arranged special air evacuation for the excessive patients at Subic Bay, affording the census to drop to 87.

One case referred from Clark to Subic Bay was an above-the-knee amputation, gas gangrene. That patient was rendered diving compression chamber, hyperbaric oxygen therapy by the Station Hospital diving medical officer, LT W. E. Billings, MC USNR. The patient is doing well at the time of this writing, although the gas gangrene had progressed to the level of the hip prior to chamber treatment.

This is one example of the many ways Subic Bay and Clark have supported one another and illustrates the great advantage derived when the medical departments of the various services work toegther. —Public Information Office, Subic Bay, Philippines.

MEN NURSES COMMENCE ACTIVE DUTY IN THE NAVY

On 12 October 1965, five men Nurse Corps officers—the first men to be commissioned in the Navy Nurse Corps—will report to the Naval Officer Candidate School, Naval Base, Newport, Rhode Island for an orientation course to naval service. Following completion of the program, they will report to the U. S. Naval Hospitals, Oakland and San Diego, California; Philadelphia, Pennsylvania; and Portsmouth, Virginia. Six additional men Nurse Corps officers will be assigned to the orientation course at Newport, Rhode Island in the near future.

Active recruiting for men nurses commenced in January, 1965 as a means of implementing a change in requirements for appointment in the Navy Nurse Corps. This change permitted qualified men nurses to be appointed in the Naval Reserve and qualified men nursing students to enlist in the Navy Nurse Corps Candidate Program. This latter program provides one or two years of financial assistance to junior and senior collegiate nursing students enrolled in accredited baccalaureate degree programs of nursing. Following completion of degree require-

ments, the candidates serve on active duty for 2 years for 1 year of subsidized education and for 3 years for more than 1 year of subsidization.

The policy change also provides another avenue to enlisted men to be appointed to commissioned rank. Outstanding petty officers in the Hospital Corps are now eligible to apply for assignment to the Navy Enlisted Nursing Education Program. Selected applicants will be ordered to a university conducting a baccalaureate degree program of nursing for a period not to exceed 4 years. Upon completion of degree requirements, the graduates of the program will be appointed in the grade of Ensign, Nurse Corps, U. S. Naval Reserve.—Nursing Division, BuMed.

WHAT'S NEW IN TRAUMA IN YOUR AREA?

Are your teenagers motor bike fans? A new epidemic is gaining ground in the United States. James C. Drye, a member of the Kentucky Committee on Trauma, and professor of surgery at the University of Louisville School of Medicine, reports that in that city by the middle of June this year, 53 motorcycle accidents had injured 43 riders and killed one. This compares with 16 accidents and eight injuries at the same time in 1964. The boy, and the girl riding behind him, usually do not wear safety equipment or goggles. The machines can be rented.

It is estimated that more than 140,000 of the popular, small-type motorcycles were sold in the United States last year. The sales total of 1965 is expected to reach 300,000. The Louisville Courier Journal is cooperating in trying to arouse the public to help save the youngsters.

Dr. Drye says: "The young boy died Thursday afternoon in the operating room. He had been hit pretty hard.

"There was a large laceration of his scalp and injury to his brain. His right lung was torn and there was a fair amount of blood in his chest. His spleen was ruptured and bleeding. There were about three quarts of blood in his abdomen. His left leg was almost amputated. His pelvis was fractured.

"He was not hit by an artillery shell in Viet Nam as one might think from the extent of his injuries. He was hit on a motor bike on the streets of our community.

"He will not be the last boy killed this summer on a motor bike on our streets. The great majority of the victims are boys 16 to 18 years old.

"The motor bike is fun to ride, convenient, and it is cheap transportation, but is it worth the inevitable mayhem, death and economic loss? If you think so, get your son a motor bike for his "last birthday."

"If this letter sounds bitter, perhaps it is because I was operating on the boy when he died."—Bulletin of American College of Surgeons, Sept-Oct 1965.

CHANGE OF COMMAND AND RETIREMENT CEREMONIES

On August 31, CAPT Herschel C. Sudduth, MC USN, relieved CAPT John R. Seal, MC USN, as Commanding Officer, Naval Medical Research Institute. CAPT Seal retired after 23 years of naval service, of which the last 4 years were at helm of the institute. Approximately 300 dignitaries, fellow officers, staff members and friends attended a reception honoring Drs. Sudduth and Seal following the ceremonies.—NMRI Notes, No. 10, Oct 1965.

MEDICAL BENEFITS OF THE SOCIAL SECURITY ACT AMENDMENTS OF 1965

Beginning 1 July 1966 most Americans age 65 and over will become eligible for two kinds of health insurance protection: hospital insurance benefits, and for those who wish it, supplementary medical insurance. The following brief digest of the more important provisions of the two plans is taken from BUMED NOTICE 6320, Subj; Medical Benefits of the Social Security Act Amendments of 1965, of 4 October 1965. The Newsletter will carry other articles on these provisions and their relationship to service medical care as soon as additional information becomes available.

A. *General.* Beginning 1 July 1966, nearly all Americans age 65 and over will become eligible for the benefits of two new health programs: (1) Hospital Insurance, the "basic" plan, providing payments for hospital and related care financed through payroll deductions and self-employment taxes, and (2) Medical Insurance, a voluntary supplementary plan providing payments for physicians' and other health services financed through payments by participants of small monthly premiums. These two plans are covered in more detail below.

B. *How To Qualify for Benefits if Age 65 or Over* Most people will not have to go to a Social Security district office to qualify.

1. A person need not go if:

a. *He is receiving Social Security or Railroad Retirement benefits.* Qualification for Hospital Insurance is automatic and application cards for the supplementary Medical Insurance are being sent out.

b. *He is receiving Federal Civil Service Retirement Annuity.* Information and application forms, and necessary instructions are being sent out by mail.

c. *He is receiving public assistance payments.* It is anticipated that public authorities will advise and assist in applications for enrollment.

2. *A person should go before 31 March 1966 if he is not receiving one of the above payments and if:*

a. *He worked under Social Security but has never applied for benefits.*

b. *He has never worked under Social Security.* He should take proof of birth.

C. *Hospital Insurance (the "Basic" Plan)*

1. *Hospitalization.* Commencing 1 July 1966. Provides up to 90 days during any spell of sickness for covered services in a participating hospital. The first 60 days are subject to a $40 deductible and the remaining 30 days are subject to a $10 a day deductible. There is a lifetime limit of 190 days on care in mental hospitals.

2. *Post-Hospital Care.* Commencing 1 January 1967.

a. *Care in Extended Care Facilities.* After a hospital stay of at least three days and for each spell of sickness, provides for care up to 20 days in an extended care facility (it may be a skilled nursing home or a convalescent section of a hospital which meets the requirements of the law) and all but $5 a day for an additional 80 days.

b. *Home Health Services.* Provides up to 100 visits by nurses or other health workers in the 365 days following release from hospital or extended care facility and before commencement of a new spell of illness.

c. *Outpatient Hospital Diagnostic Services.* Pays 80% of the cost (after patient pays first $20) for diagnostic services received in a participating hospital during a 20-day period.

3. *Not Covered (Partial Listing).* Physicians' and surgeons' services either in or out of a hospital, routine physical checkups, eyeglasses, hearing aids, private duty nurses, private rooms unless medically required, custodial care, personal services such as telephone or television in room, drugs not provided in an extended care facility or hospital, care in Federal facilities except under certain limited circumstances, and care in nonparticipating hospitals except in certain emergency situations. Services outside the United States (the 50 States, the District of Columbia, Puerto Rico, Guam, Virgin Islands, and American Samoa) are limited to emergency inpatient services in a hospital which is closer or more accessible than the nearest U. S. hospital capable of providing the required services. In addition, the injury or illness must have occurred within the United States.

4. *Persons Eligible for Benefits.* Initially all persons 65 and over, except certain aliens, persons convicted of subversive crimes, and Federal employees eligible under the Federal Employees' Health Benefits Act of 1959.

5. *Financing: Federal Hospital Insurance Trust Fund.* All benefits and administrative costs of the Hospital Insurance Plan will be paid from the separate fund built up through equal contributions of employers and employees or by payments by the self-employed. These will be collected through a separate payroll deduction in the same manner as regular Social Security contributions, or in the case of the self-employed by self-employment taxes. Costs to the fund for benefits for the estimated 2 million people not entitled to either monthly Social Security benefits or Railroad Retirement annuity will be covered by reimbursement from the general tax revenues. The rates for the payments (either payroll deductions or self-employment taxes) are as follows:

1966	0.35%	on	first	$6600
1967-1972	0.50%	"	"	"
1973-1975	0.55%	"	"	"
1976-1979	0.60%	"	"	"
1980-1986	0.70%	"	"	"
1987 on	0.80%	"	"	"

D. *Medical Insurance.* Commencing 1 July 1966. This plan pays 80% of the reasonable costs of covered services except for the first $50 in any calendar year.

1. *Benefits Covered*

a. *Physicians' and Surgeons' Services.* No matter where provided.

b. *Home Health Services.* Pays for up to 100 visits a year of nurses or other health specialists even though no prior hospitalization involved. This may be in addition to the visits covered by the Hospital Insurance plan.

c. *Other Medical and Health Services (Regardless of Where Furnished).* Includes such things as diagnostic tests; X-ray and radium treatments; surgical dressings; splints; casts; certain ambulance services; braces; artificial legs, arms, or eyes; rental of medical equipment such as iron lungs; and many other items and services.

2. *Not Covered* (*Partial Listing*). Routine physical checkups, eyeglasses, hearing aids, private duty nurses, custodial care, personal services such as telephone or television in hospital room, drugs when not administered by a physician as part of his services and then only if they cannot be self-administered, and services furnished outside the United States (the 50 States, the District of Columbia, Puerto Rico, Guam, Virgin Islands, and American Samoa). Payments for outside-of-hospital treatment for mental, psychoneurotic, and personality disorders are limited to $250 or 50% of the expenses, whichever amount is smaller.

3. *Persons Eligible for Benefits.* All persons age 65 or over except certain aliens.

4. *Financing.* Benefits payable from the separate Federal Supplementary Medical Insurance Trust Fund built up from voluntary payment of monthly premiums of $3 (subject to change after 1967) by persons age 65 and over with matching payments made by the Government from the general tax revenue. Persons who receive monthly Social Security or Railroad or Civil Service retirement benefits will have the premium payments deducted from the monthly check.

5. *Enrollment.* Persons reaching 65 before 1 January 1966 must enroll before 1 March 1966 in order to be covered when the payment of benefits commences on 1 July 1966. Persons reaching 65 after December 1965 will have protection as soon as they reach 65 only if they enroll during the 3-month period just before reaching 65.—BuMed Code 314.

ACKNOWLEDGMENT

In the U. S. Navy Medical News Letter 46(6): 14, of 24 September 1965 under U. S. Naval Medical Research Reports change U. S. Naval Research Institute, NNMC, Bethesda, Md. to "U. S. Navy Toxicological Unit, NNMC, Bethesda, Md."